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ABSTRACT

Using data from the 1991 IEA (International Association for the Evaluation of Educational Achievement) Reading Literacy Study, a study compared United States fourth- and ninth-grade students to students in 32 other countries; examined relationships between reading comprehension and aspects of family, schooling, and community; and investigated the nature of reading instruction in American classrooms. National samples of classes at the grade level containing the most 9-year-olds and 14-year-olds were used. A "world average" was constructed of the 18 participating nations that are also members of the Organization for Economic Cooperation and Development (OECD). Results indicated that (1) American fourth graders outperformed students from all other countries except Finland; (2) American ninth graders' performance was closely grouped with that of students from 15 other nations; (3) in the United States, White students read better than Black and Hispanic students; (4) most groups of American students outperformed the OECD average; (5) students whose parents did not finish high school read at about the same level as the OECD average at fourth grade, but fell below the average in the ninth grade; (6) when differences in wealth, race/ethnicity, level of parental education, and other related attributes were taken into account, children from one-parent mother-only families did as well as children from two-parent families; (7) parents' educational attainment influenced reading comprehension over and above other aspects of family background; (8) what teachers said they believed about reading instruction differed markedly from what they actually did and had students do. (Contains 70 references, 43 notes, 4 exhibits, 3 tables, and 29 figures of data.) (RS)

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Reading Literacy in the United States

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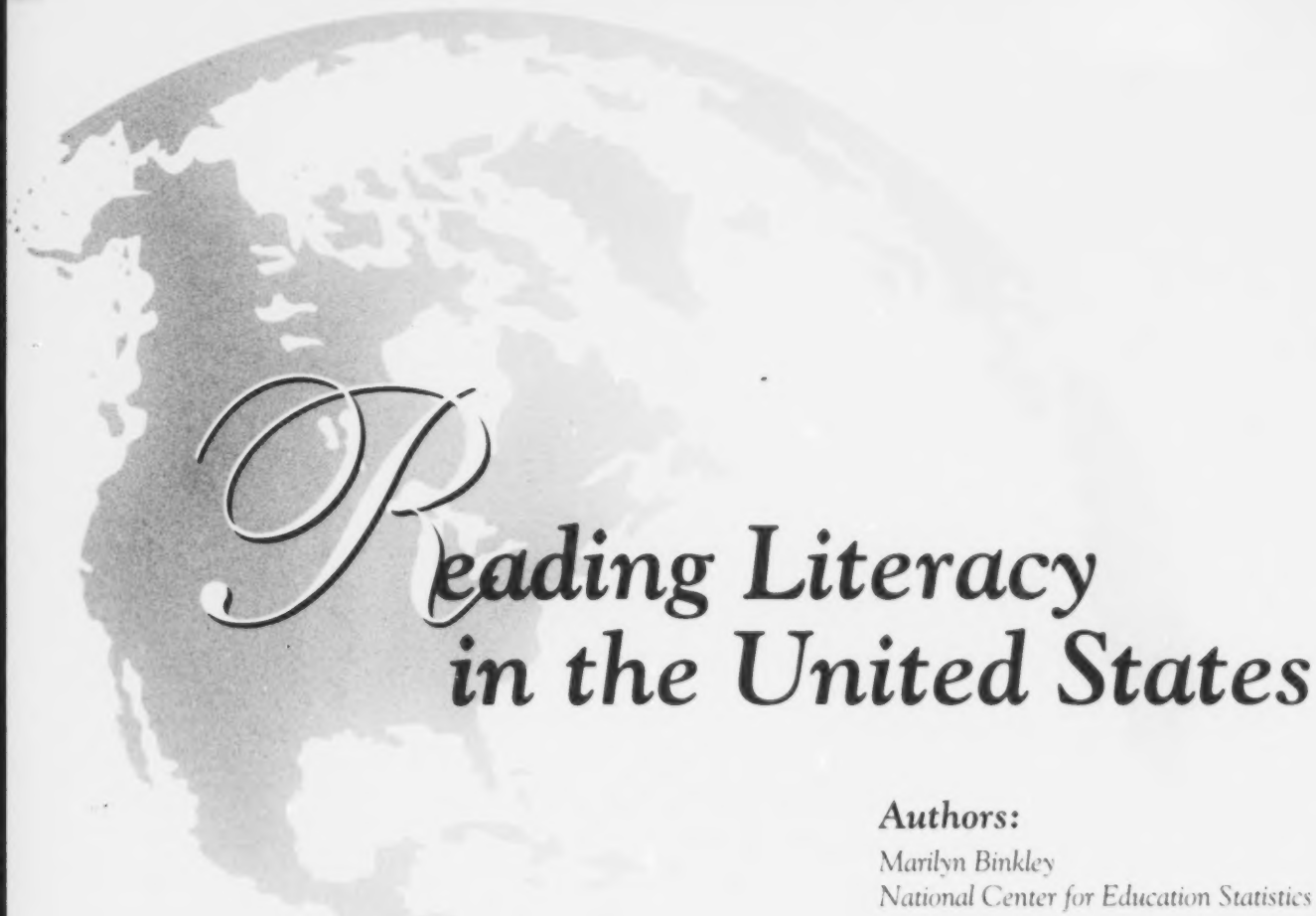

Reading Literacy in the United States

Authors:

Marilyn Binkley
National Center for Education Statistics

Trevor Williams
Westat, Inc.

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Preface

Over the past 10 years, interest in the international standing of American students has grown rapidly. Although the recent history of this interest dates back to the 1950s at the time of Sputnik, the publication of *A Nation at Risk*[1] in 1983 once again forced us to face the reality that American students appeared not to be as academically proficient as their peers in other industrialized nations. It was particularly disturbing to note the generally poor showing of the United States relative to nations that compete with us in world markets. We began to ask again whether our education system was up to the task of preparing American youth for the challenges of an increasingly complex, information-based society, and whether our competitive advantage in the world economy would be maintained into the 21st century.

These concerns generated a call to discover those aspects of our education system that might be changed to improve student performance. Cross-national studies are helpful in this respect. In addition to measuring student achievement and ranking nations in these terms, international studies also collect information on the education system of each participating country. This kind of information can be particularly useful since it allows educators everywhere to learn from the experiences of other nations.

In 1989 the United States joined the IEA International Reading Literacy Study.* Findings from this 32-nation study are available in several IEA publications.[2] They show that, contrary to expectation, U.S. students turned in a creditable performance vis-à-vis their peers in other nations.

This preface introduces a study of the reading comprehension of 4th and 9th grade students in the United States that goes beyond simple comparisons of national achievement levels. It is based on the data generated by our participation in the IEA international project. We came away from that project with a rich body of information about our own schools and students, and we have taken the opportunity to use it to develop a detailed national report for the United States. International comparisons are part of this report. They are presented so that the reader can place the United States in an international perspective, compare the performance of various sectors of the U.S. popu-

* IEA—the International Association for the Evaluation of Educational Achievement—has been coordinating cross-national studies in a variety of subject matter areas since the late 1960s.

lation with the performance of children in other nations, and, thus, evaluate our students against a world standard. We examine the nature of the reading skills measured in the IEA study relative to those measured in the National Assessment of Educational Progress (NAEP). The report also looks at the reading comprehension skills of 4th graders, the variation in these skills across various subpopulations of students, and the explanations for these variations according to what families, teachers, and schools do and provide.

The analyses undertaken are somewhat technical and are reported in detail in a companion report, *Reading Literacy in the United States: Technical Report*. In this volume, however, the authors take pains to distill the findings and present them in a form that will be familiar to most readers. In so doing, they provide us with some valuable insights into the reading literacy of 4th and 9th graders across the nation.

Jeanne E. Griffith
Acting Commissioner,
National Center for Education Statistics

Executive Summary

In 1991, the IEA Reading Literacy Study assessed the reading literacy of 4th and 9th graders in many countries. This report presents three sets of findings from that report:

- how U.S. students compare to students in other countries;
- relationships between reading comprehension and aspects of family, schooling, and community; and
- the nature of reading instruction in American classrooms.

How does the reading performance of American students compare to that of students in other countries?

The IEA study painted an encouraging picture of the reading literacy of American students, as shown in the first section of the report. American 4th graders outperformed students from all other nations except Finland and Sweden. American 9th graders' performance was closely grouped with that of students from 15 other nations. American students outperformed students from 14 countries, while students from Finland outperformed Americans.

To create a meaningful benchmark that would provide comparisons to many of our trading partners and competitors, we constructed a "world average" of the 18 participating countries that are also members of the Organization for Economic Cooperation and Development (OECD). Judged against this world average, American students perform well overall. Among the 4th graders, the reading performance of about 60 percent of U.S. students meets or exceeds the OECD average in the narrative and expository domains, as it does for 70 percent of U.S. students for documents. The comparative advantage of American students is not as great at 9th grade, where 52 to 55 percent of U.S. students meet or exceed the OECD average.

How does the reading performance of subpopulations of U.S. students compare to that of students in other countries?

The reading performance of U.S. students is related to student characteristics such as race/ethnicity, parental education, and family structure. At both 4th and 9th grade, white students, on average, read better than black and Hispanic students, and students with at least one parent having a college degree read better, on average, than students whose parents have not finished high school. Students whose families are poor do not read as well as those students whose families are better off.

Most groups of American students outperform the OECD average. Even the most disadvantaged American students do not differ dramatically from the OECD average. The reading performance of white students, those with at least one parent who attended college, and those with higher levels of family wealth exceed the OECD average at both

4th and 9th grade. In general, the average performance of Hispanic students does not differ from the OECD average, while the average performance of black students is below the OECD average. Those whose parents did not finish high school read at about the same level as the OECD average at 4th grade, but fall below the OECD average in the 9th grade. The poorest quartile of students (in terms of an indirect measure of family wealth) performs at about the OECD average in both grades. Four types of family structure were examined in the report—two biological parents, two-parent blended families, mother-only families, and "other" families—and students from each of these types of families meet or exceed the OECD average in both grades. Thus, only the performance of black students in both grades and those in 9th grade whose parents did not complete high school did not consistently meet or exceed the OECD average.

Among white students, about 70 percent of 4th graders and 60 percent of 9th graders equal or exceed the OECD average. The comparable figures for black students are less than 40 percent among 4th graders and less than 30 percent among 9th graders, and for Hispanic students, 44 to 53 percent among 4th graders and about 35 percent for 9th graders. Among both 4th and 9th graders, two-thirds of students with college-educated mothers exceed the OECD average. In addition, 4th graders whose mothers are high school dropouts, on average, do as well as the OECD average. But fewer 9th graders whose mothers are high school dropouts do as well—only about 35 percent equal or exceed the OECD average. Essentially the same observations apply to fathers' education.

How do the results from the IEA Reading Literacy Study compare with results from the U.S.'s own National Assessment of Educational Progress (NAEP)?

Although the overall credible performance of American students on the IEA Reading Literacy Test may seem inconsistent with the findings of NAEP, which found that only a small percentage of American students were able to read at an "advanced" level, this apparent inconsistency may be due to differences in the points of comparison used to report findings–IEA reporting is based on comparisons of student performance across countries while much of NAEP reporting is based on comparisons of student performance against a desired standard that has been defined independently of test results.

A close examination of the two tests reveals marked differences in definitions of reading literacy and in what students must do to demonstrate their comprehension of material. The IEA test mainly asks students to recognize details and to make simple inferences and literal interpretations. The NAEP test requires students to do all these things, but in addition, it asks them to identify themes, detect the author's point of view, make larger inferences, express opinions and support them with citations from the text, and write summaries of the reading selections on the test.

How do the characteristics of families and schools relate to the reading performance of American students when other factors are taken into account?

Factors such as parental education, family wealth, race/ethnicity, and family structure tend to be related to one another. For example, the parents in poor families are more likely to be high school dropouts. The second section of the report is based on statistical analyses that tease out the unique nature of relationships between the characteristics of 4th grade students, their families, their schools, teachers, and communities, and narrative comprehension levels, and that allow an interpretation of the effect of individual factors *other things equal*.

The results of those analyses suggest that when differences in wealth, race/ethnicity, level of parental education, and other related attributes are taken into account, children from one-parent mother-only families appear to do as well as children from two-parent families in which both parents are the student's biological parents, and both do better than children from two-parent blended families, where one or both of the parents is a stepparent or guardian.

Although coming from a poor family is strongly associated with poor reading achievement, when parents' education, minority status, and the like are factored out, the apparent reading achievement gap between the rich and poor is reduced by two-thirds. The educational attainments of both mothers and fathers influence reading comprehension over and above other aspects of family background.

In elementary schools with high levels of parental involvement, children do better in reading comprehension; other things equal, 4th grade average reading scores are 26 points below the national average where involvement is low but 17 points above the national average where parent involvement is high.

What does reading instruction look like in the United States?

The third section of the report examines the beliefs and practices of American teachers with regard to the teaching of reading. Teachers' responses to questions related to instructional practices suggest that what teachers say they believe about reading instruction differs markedly from what they actually do and have students do.

Acknowledgments

The International Reading Literacy Study, which provided the basis for this report, was conducted under the auspices of the International Association for the Evaluation of Educational Achievement (IEA). The International Steering Committee, the International Coordinating Center, and the National Research Coordinators of each of the participating countries developed the assessment instruments, assessment procedures, and scaled scores used to report the results, and oversaw the conduct of the study internationally.

Within the United States, the research was sponsored by the International Activities Group of the Data Development Division of the National Center for Education Statistics (NCES). Marilyn Binkley was U.S. National Research Coordinator, and project director for the study. The data collection and much of the analysis was carried out by Westat, Inc., under the direction of David Bayless, Keith Rust, and Trevor Williams. Overall project direction was provided by Jeanne Griffith, Associate Commissioner for Data Development throughout most of the life of the project, and Gary Phillips, Associate Commissioner for Educational Assessment. Eugene Owen, Chief of the International Activities group, provided constant support and guidance at both the national and international levels.

The findings presented in this report were drawn from the results of the analyses reported upon in the accompanying technical report, published in 1994, using the data that were collected via the methods described in that report. Thus, those individuals acknowledged in that report also contributed in a direct way to the value of this report. We ask the reader to refer to the technical report to identify those individuals who contributed so much to the conceptual and technical aspects of the study. Special mention is due, however, to Stephen Roey at Westat, who undertook many of the analyses conducted especially for this report, as well as those in the technical report.

A number of others have made significant contributions to this report in its own right. The members of the NCES-appointed review panel provided many important suggestions for improvement, and the report has benefited from their incorporation. The panel members were Nabeel Alsalam, Sharon Bobbitt, Peggy Carr, Emerson Elliott, James Guthrie, Barbara Kapinus, Irwin Kirsch, Paula Knepper, Ramsay Selden, and Floraline Stevens.

The final form of the report owes much to the patience and diligence of Mary Frase, who painstakingly undertook the task of ensuring that the statements and tabulations in the report were clear, valid, consistent, and in accord with the underlying data. Robert Burton and Susan Ahmed provided sound direction for the technical presentation of the material. These three individuals helped to ensure that the report met or exceeded NCES standards for reporting, and we thank them for their many contributions.

This report is intended for a wider audience than many published by NCES. For editorial guidance in making the report acceptable to this wider audience, we thank Harriet Tyson. Carol Litman assisted with the technical editing of the report. Sylvie Warren, Luann Moore, Lynne Hofman, and Gil Leigh undertook the preparation of the text and figures, and worked painstakingly to incorporate the many revisions as they arose. Responsibility for any remaining errors rests with the authors.

Comparing the
Achievement of
Nations and
Students

Introduction

Since colonial times, Americans have seen literacy as an essential requirement for citizens in a democracy. In the 20th century, the American people have shown a continuing concern for improving the literacy levels both of students in school and of adults. The U.S. government regularly measures the reading skills of our school-age population and takes a similar, though less frequent, interest in the literacy levels of adult Americans.

The results of these studies are not always encouraging. The National Assessment of Educational Progress (NAEP) has tracked the reading performance of students periodically since 1969. Its 1992 national report concludes that while most students at grades 4, 8, and 12 have mastered basic competencies, too few have reached levels likely to be required for the 21st century work place.[3] The results of the National Adult Literacy Study (NALS) are no more encouraging. Large percentages of adults demonstrate limited skills that may restrict their opportunities for gaining access to and achieving in many occupations.[4]

The information from the IEA International Reading Literacy Study, however, seems to contradict NAEP's finding about the reading abilities of American students. On all three dimensions of reading literacy included in the study (narrative, expository, and documents), American students are either second among the nations or their scores are not significantly different from the scores of students from other advanced nations. (Analyses reporting international comparisons are available in several publications.[5])

Organization of This Report

Although we begin with international comparisons, the primary focus of *Reading Literacy in the United States: Findings From the IEA Reading Literacy Study* is on the reading comprehension of 4th and 9th grade American students. The report follows three separate lines of inquiry. In the first, we compare the performance of American students on the IEA Reading Literacy Test to that of students in other nations. Because our students did better than might have been expected given U.S. performance on other international comparative assessments and reports from the U.S.-only National Assessment of Education Progress, we looked at differences between the test instruments in order to explain the apparent discrepancy. In addition to looking at comparisons across nations, the comparisons were extended to determine whether all sectors of our student population demonstrate the

same high levels of literacy. Our second line of inquiry focuses on the relationships between reading comprehension and aspects of family, schooling, and community. Using complex statistical procedures, we more finely examine the complex relationship among the variables that may have an impact on the development of reading comprehension skills. Finally, in the third section, we examine the nature of reading instruction in American classrooms so that we might present a quick snapshot of the current state of the art in instruction. In this manner, we create three separate complementary pictures of reading comprehension and instruction in the United States.

International Comparisons

Charts that rank nations according to the achievement levels of their students capture much public attention, probably because they touch on matters of national pride and arouse concerns about the nation's reserves of human capital. The International Association for the Evaluation of Educational Achievement has been the primary source of such comparisons over the past 30 years. In most, the United States has lagged behind other nations, especially in mathematics and science.

Dimensions of the IEA Reading Literacy Study

In 1989, popular interest in the reading skills of American students, and the question of where we stood relative to other nations with regard to reading literacy, led the United States government to join 31 other nations in an international study of reading literacy sponsored by IEA. **Exhibit 1** lists the participating nations.*

Assessing Reading Literacy. To ensure fairness in international comparisons, IEA studies begin with a search for curricular elements common to the participating nations. Achievement tests are then developed based on these common elements. This process is designed to ensure that each nation's students have an equal chance to demonstrate their skill.

Within this context, IEA defined reading literacy in the following way:

> *. . . the ability to understand and use those written language forms required by society and/or valued by the individual.*[6]

Exhibit 1

Participating Countries

Belgium (French)	Netherlands
Botswana	New Zealand
Canada (British Columbia)	Nigeria
Cyprus	Norway
Denmark	Philippines
Finland	Portugal
France	Singapore
Germany (East)	Slovenia
Germany (West)	Spain
Greece	Sweden
Hong Kong	Switzerland
Hungary	Thailand
Iceland	Trinidad & Tobago
Indonesia	United States
Ireland	Venezuela
Italy	Zimbabwe

*Although 32 countries participated in the study as a whole, only 30 countries collected data related to 9-year-olds (4th grade in the United States) and only 27 provided usable data. Similarly, 32 nations collected data related to 14-year-olds (9th grade in the United States), but only 31 nations entered the analyses.

Table 1

Countries Ranked by 4th Grade Reading Achievement: Total Score

Country	Mean	Standard Error
United States	547	2.8
Sweden	539	2.8
France	531	4.0
Italy	529	4.3
New Zealand	528	3.3
Norway	524	2.6
Iceland*	518	0.0
Hong Kong	517	3.9
Singapore	515	1.0
Switzerland	511	2.7
Ireland	509	3.6
Belgium (French)	507	3.2
Greece	504	3.7
Spain	504	2.5
Germany (West)	503	3.0
Canada (British Columbia)	500	3.0
Germany (East)	499	4.3
Hungary	499	3.1
Slovenia	498	2.6
Netherlands	485	3.6
Cyprus	481	2.3
Portugal	478	3.6
Denmark	475	3.5
Trinidad/Tobago	451	3.4
Indonesia	394	3.0
Venezuela	383	3.4

*Iceland tested all students, therefore no standard error was calculated.

Mean achievement higher than United States
Mean achievement equal to United States
Mean achievement lower than United States

SOURCE: Elley, Warwick B., *How in the World Do Students Read?*, The Hague: International Association for the Evaluation of Educational Achievement, 1992.

The designers applied this definition of literacy to the three text forms that students most often encounter in school and in everyday life:

- *narrative prose*—text in which the writer tells a story, whether fact or fiction;
- *expository prose*—text in which the writer describes, explains, or otherwise conveys factual information or opinion; and
- *document*—information displays such as charts, maps, tables, graphs, lists, or sets of instructions.

IEA developed tests for each of the three forms of literacy. Students responded to most questions in a traditional multiple-choice format, although they had to write brief answers to a few questions.*

Questionnaires. The students, along with their teachers and the principals of their schools, also completed questionnaires that sought information on the attributes of families and schools related to these essential skills.**

Student Populations Sampled. In each of the 32 participating nations, national samples of classes at the grade level containing the most 9-year-olds and 14-year-olds were selected to take part in the study. The selected classes included students who were all full-time, mainstreamed members of regular classes. The United States tested students in grades 4 and 9 because these grades generally contain 9-year-olds and 14-year-olds. At the 4th grade, we sampled regular classes; at the 9th grade, we sampled English/language arts classes.

Comparisons with All IEA Participating Countries

Tables 1 and 2, adapted from the IEA international report *How in the World do Students Read?*, show the national averages for 9-year-olds and 14-year-olds, respectively. In each table, countries are ranked in descending order on a measure of overall reading comprehension—one that combines the scores on narrative, expository, and documents comprehension.

*For a full description of the test instrument, see Chapter 7 of *Reading Literacy in the United States: Technical Report*.

**For a full description of the questionnaires used to collect these data, see Chapter 11 of *Reading Literacy in the United States: Technical Report*.

The message of these tables seems straightforward at first glance: U.S. 4th graders place second after Finland, and our 9th graders place ninth after Finland, France, Sweden, New Zealand, Hungary, Iceland, Switzerland, and Hong Kong. The picture, however, is not as clear cut as it might appear. National means are based on samples of students, not whole student populations,* and thus have a degree of sampling variation associated with them. When we consider the effect of such sampling variation (as measured by the standard error) on national averages, as well as the very small differences between countries, the ranked differences could be due to such variability rather than to real differences in the achievement of national populations.

Within this context, Finland's 9-year-olds continue to outperform 9-year-olds in the United States, and Sweden's national average is not reliably different from that of the United States. However, the United States does have a national average reliably greater than the remaining countries.

In the case of 14-year-olds, Finland's mean score is reliably greater than that of the United States. But the performance levels of 15 of the 30 remaining countries are not reliably different from that of the United States. The 15 are France, Sweden, New Zealand, Hungary, Iceland, Switzerland, Hong Kong, Singapore, Slovenia, East Germany, Denmark, Portugal, Canada (British Columbia), West Germany, and the Netherlands. This leaves U.S. students outperforming those in the remaining 14 countries: Norway, Italy, Ireland, Greece, Cyprus, Spain, Belgium (French), Trinidad and Tobago, Thailand, Philippines, Venezuela, Nigeria, Zimbabwe, and Botswana.

Since Tables 1 and 2 report the combined scores on narrative, expository, and documents reading comprehension, they may obscure the national differences that occur for each domain. Reading experts believe that the three domains require somewhat different types of reading and thinking. They also assume that national educational systems and cultures may differ in their relative emphasis on each type of reading task.

*Iceland is an exception; the whole 4th grade population was tested.

Table 2

Countries Ranked by 9th Grade Reading Achievement: Total Score

Country	Mean	Standard Error
Finland	549	4.3
Sweden	546	2.5
New Zealand	545	5.6
Hungary	536	2.3
Iceland	536	0.8
Switzerland	536	2.2
Hong Kong	535	3.7
United States	535	4.8
Singapore	534	1.1
Slovenia	532	2.3
Germany (East)	528	2.5
Denmark	525	2.1
Portugal	523	3.1
Canada (British Columbia)	522	3.0
Germany (West)	522	4.4
Norway	516	2.3
Italy	515	3.4
Netherlands	514	4.9
Ireland	511	5.2
Greece	509	2.9
Cyprus	497	2.2
Spain	490	2.5
Belgium (French)	481	4.9
Trinidad/Tobago	479	1.7
Thailand*	477	6.2
Philippines	430	3.9
Venezuela	417	3.1
Nigeria*	401	—†
Zimbabwe*	372	3.8
Botswana	330	2.0

*Sampling response rate of schools below 80%
† Insufficient data to calculate standard error

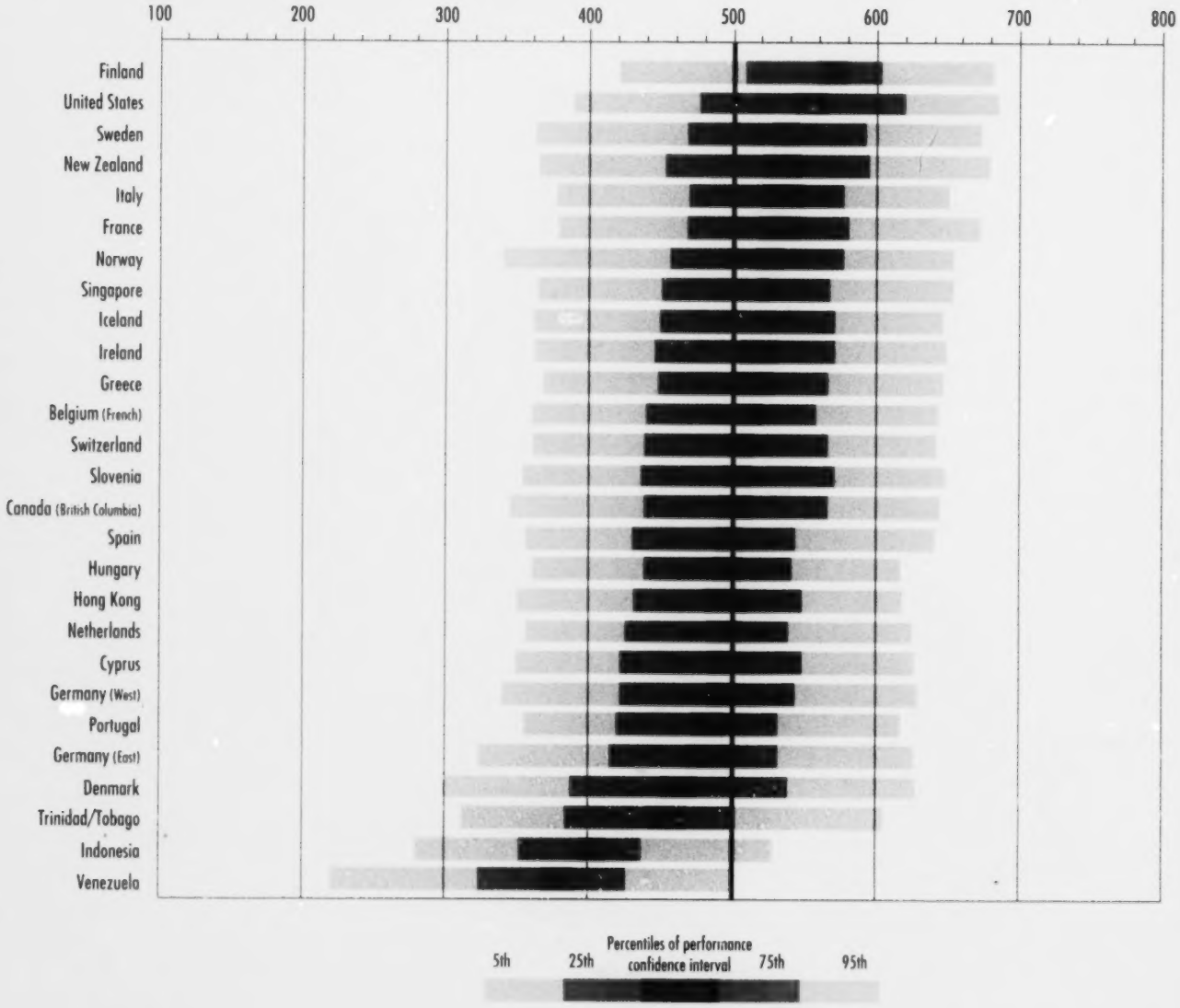
Mean achievement higher than United States
Mean achievement equal to United States
Mean achievement lower than United States

SOURCE: Elley, Warwick B., *How in the World Do Students Read?*, The Hague: International Association for the Evaluation of Educational Achievement, 1992.

To make these differences clear, we reproduce six figures from *How in the World do Students Read?* to show how national rankings differ across the three reading domains. **Figures 1, 2, and 3**

Figure 1

Countries Ranked by 4th Grade Reading Achievement: Narrative Score



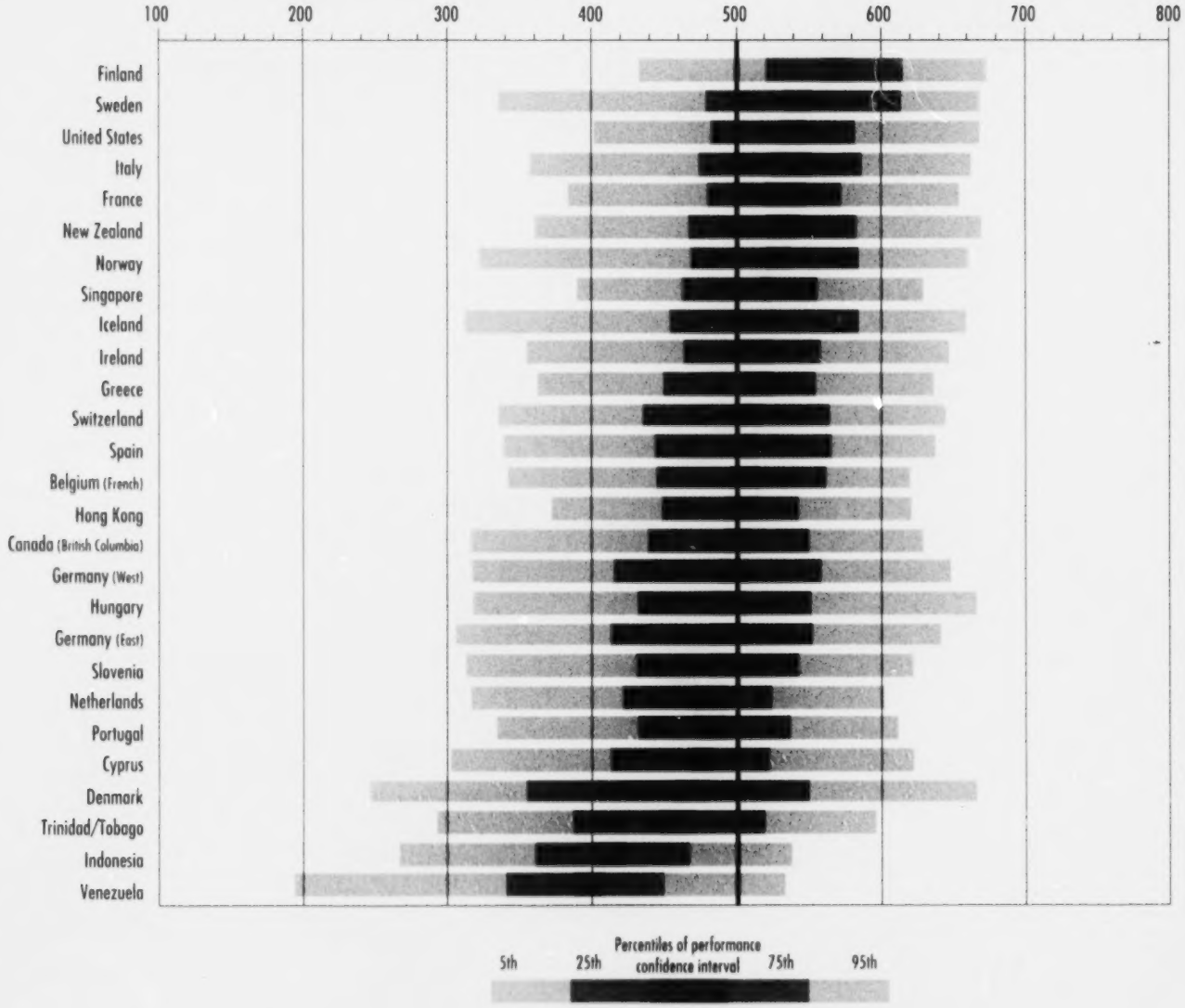
NOTE: The center solid box indicates a confidence interval around the average reading proficiency for a country; 5th, 25th, 75th, and 95th percentiles are indicated by shaded bars.

SOURCE: Elley, Warwick B., *How in the World Do Students Read?* The Hague: International Association for the Evaluation of Educational Achievement, 1992.

rank the reading performance of 9-year-olds for the three domains respectively. **Figures 4, 5, and 6** rank the performance of 14-year-olds for the same three domains.

Figure 2

Countries Ranked by 4th Grade Reading Achievement: Expository Score

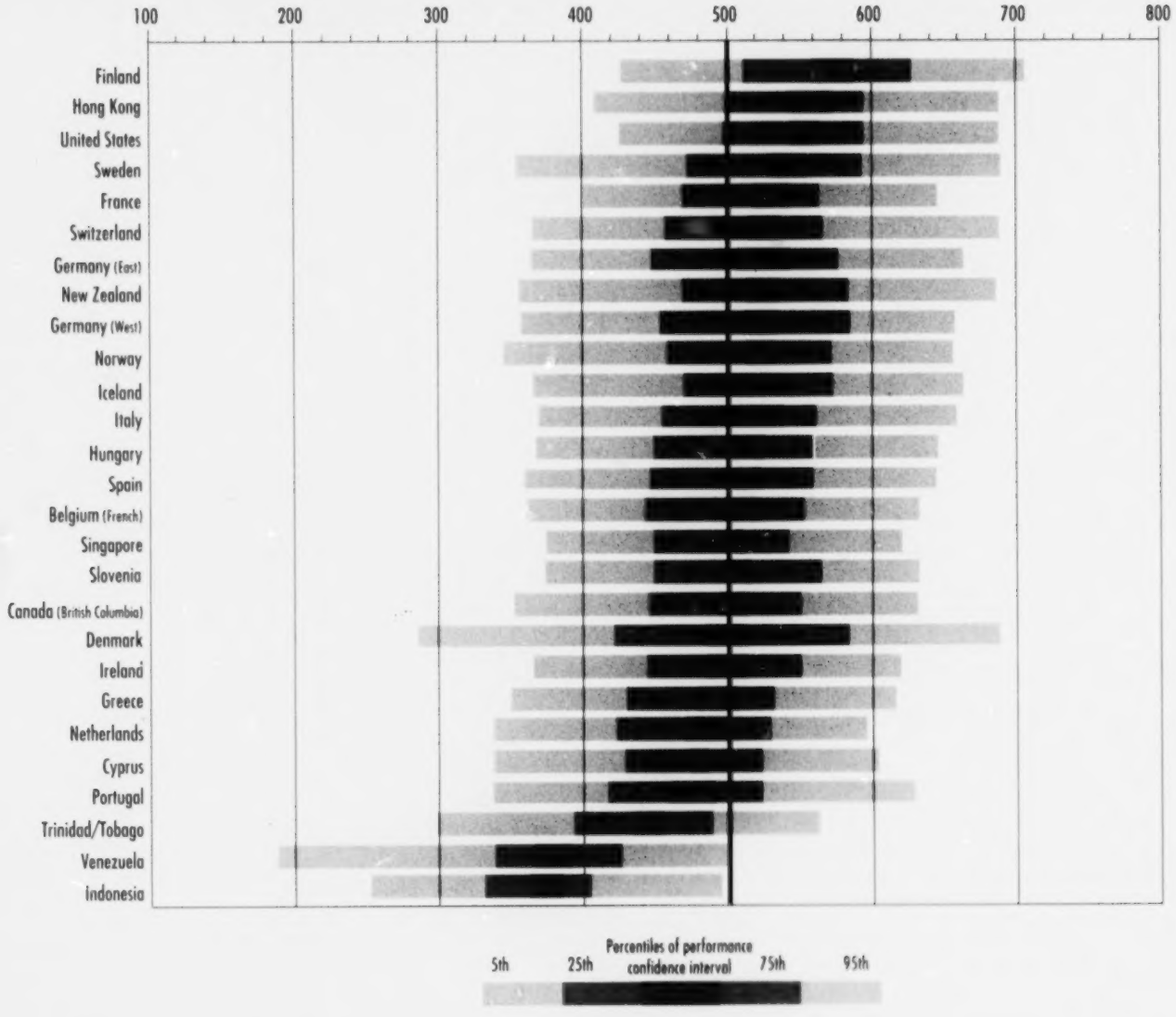


NOTE: The center solid box indicates a confidence interval around the average reading proficiency for a country. 5th, 25th, 75th, and 95th percentiles are indicated by shaded bars.

SOURCE: Elley, Warwick B., *How in the World Do Students Read?* The Hague: International Association for the Evaluation of Educational Achievement, 1992.

Figure 3

Countries Ranked by 4th Grade Reading Achievement: Documents Score

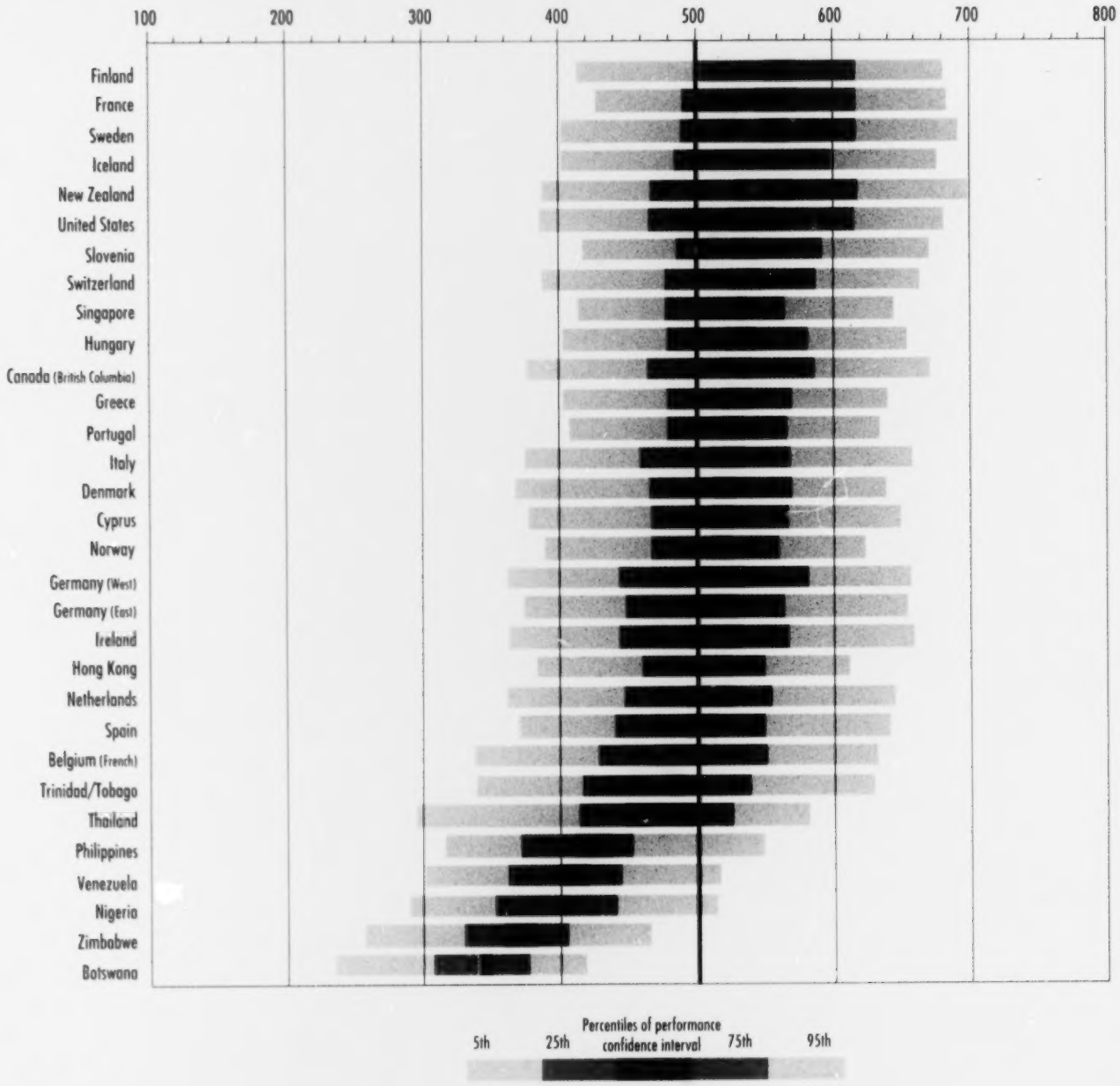


NOTE: The center solid box indicates a confidence interval around the average reading proficiency for a country; 5th, 25th, 75th, and 95th percentiles are indicated by shaded bars.

SOURCE: Elley, Warwick B., *How in the World Do Students Read?* The Hague: International Association for the Evaluation of Educational Achievement, 1992.

Figure 4

Countries Ranked by 9th Grade Reading Achievement: Narrative Score

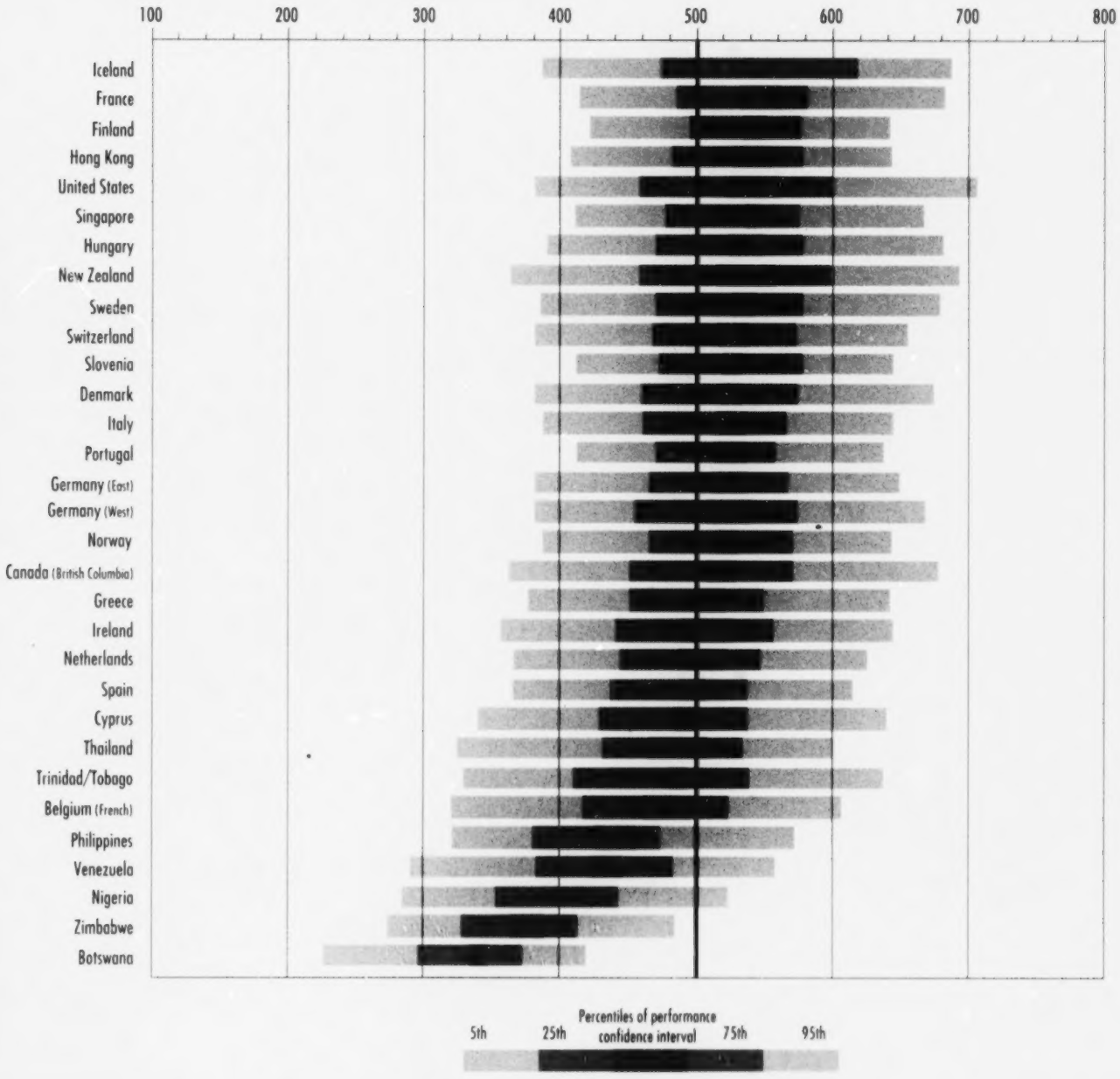


NOTE: The center solid box indicates a confidence interval around the average reading proficiency for a country; 5th, 25th, 75th, and 95th percentiles are indicated by shaded bars.

SOURCE: Elley, Warwick B., *How in the World Do Students Read?* The Hague: International Association for the Evaluation of Educational Achievement, 1992.

Figure 5

Countries Ranked by 9th Grade Reading Achievement: Expository Score

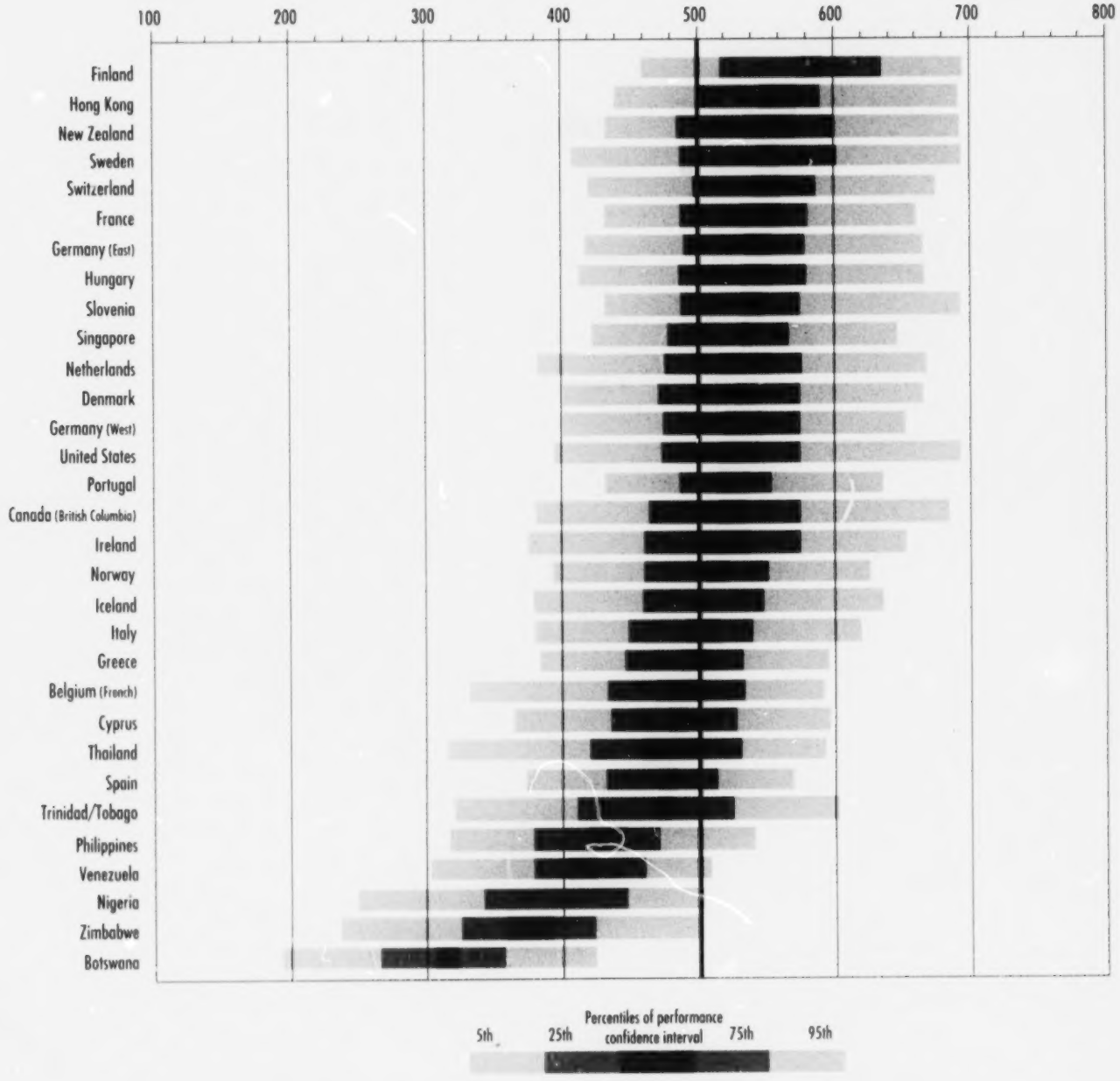


NOTE: The center solid box indicates a confidence interval around the average reading proficiency for a country. 5th, 25th, 75th, and 95th percentiles are indicated by shaded bars.

SOURCE: Elley, Warwick B., *How in the World Do Students Read?* The Hague: International Association for the Evaluation of Educational Achievement, 1992

Figure 6

Countries Ranked by 9th Grade Reading Achievement: Documents Score



NOTE: The center solid box indicates a confidence interval around the average reading proficiency for a country; 5th, 25th, 75th, and 95th percentiles are indicated by shaded bars.

SOURCE: Elley, Warwick B., *How in the World Do Students Read?* The Hague: International Association for the Evaluation of Educational Achievement, 1992.

Perhaps the most significant points to be gleaned from these six figures are that:

- U.S. 4th graders comprehend narrative text as well or better than students from any other nation except Finland.
- Although U.S. 4th graders appear to place third on expository comprehension, only Finland does better and there is very little difference in our performance and that of Sweden, Italy, France, New Zealand, and Norway.
- While students in Finland do better than the U.S. 4th graders, our students comprehend documents as well as students in Hong Kong and Sweden, and they do better than the students in the 23 other countries included in this ranking.
- U.S. 9th graders do about as well as students from France, Sweden, Iceland, New Zealand, Slovenia, Switzerland, Singapore, Hungary, Canada (British Columbia), Greece, Portugal, and Italy with respect to narrative comprehension, but not as well as those from Finland.
- U.S. 9th graders' expository comprehension ranks equal to that of students in 16 other nations, with 14 countries ranking below the United States in this domain.
- U.S. 9th graders' documents comprehension lags behind that of 9th graders from five other countries (Finland, Hong Kong, New Zealand, Sweden, and Switzerland), but it is not different from that of 11 other countries and exceeds that of the remaining 14 countries.

We cannot explain how these between-nation differences come about, but the overall performance of U.S. students is welcome good news in the face of the bad news about the achievement of American students in other international comparisons. In reading, at least, American students are among the best of the 32 nations involved in the study. With the exception of Finland, no country consistently outperforms the United States.

Comparing IEA and NAEP

In contrast to the good news provided by the IEA study, where American 4th and 9th grade students do well when compared to students from other countries, the picture of American students'

reading proficiency provided by the National Assessment of Educational Progress seems less optimistic. For example, in 1992 NAEP reported that

> *. . . For grades 4, 8, and 12, the percentages of students estimated to have met or exceeded the* Proficient *achievement level were 29, 29, and 40 percent, respectively.* Proficient, *the central level, represents solid academic performance and competency over challenging subject matter (for the grade level).*[8]

> *. . . The* Advanced *achievement level signifies superior performance beyond* Proficient. *Very few students at any of the three grades assessed attained the* Advanced *level—from 3 to 6 percent.*[9]

By 1994, the NAEP picture was slightly worse; the average reading proficiency of 12th grade students declined significantly from 1992 to 1994.[10]

This contrast of good news versus potential "doom and gloom" made us wonder whether IEA and NAEP report and/or measure different things. This question is addressed in the following discussion.

Differing Points of Comparison. One of the first things to consider was whether the data are reported in the same manner across NAEP and IEA. Although both provide descriptions of reading performance of analogous samples of students, the basis for reporting, in fact, differs considerably.

. In the case of IEA, reporting is based on comparisons of the performance of groups of students within and across countries. Student performance in one country is compared to that of students in the other participating countries. Or, students in one subgroup within a country are compared to other students in other subgroups within the same country. We look at issues such as mean performance of each country or the distribution of scores within a country as compared to the distribution of scores in other countries. We are always comparing students against students. As such, the point of comparison is a relative rather than an absolute comparison.

Alternatively, much of the NAEP reporting is based on comparisons between actual student performance and desired performance. It is a comparison against an absolute standard or criterion that is defined independently of what students do. As

described in the *NAEP 1992 Reading Report Card for the Nation and the States*, "To carry out its responsibilities, NAGB [the National Assessment Governing Board] developed *achievement levels*, which are collective judgments about how students *should* perform relative to a body of content reflected in the NAEP frameworks. The result is translated onto ranges along the NAEP scale." As such, the reporting is referenced to a description of the tasks that students are expected to be able to do, or that someone or some group thinks they should do. This is a criterion-referenced comparison.

Success or failure in either context does not necessarily imply success or failure in the other context. Consequently, American students do very well based on the relative comparisons used by IEA, but within the NAEP context they do not do as well as NAGB believes they should be doing.

Differing Definitions. In addition, NAEP and IEA define reading differently. Although their definitions overlap, there are enough differences in emphasis to further explain some of the seeming inconsistencies between NAEP's and IEA's findings.

Both IEA and NAEP expect literal comprehension and the development of understanding. Both define parallel domains: narrative prose, expository prose, and documents in the case of IEA; literary experience, to be informed, and to perform a task in the case of NAEP. However, there is a major difference between IEA and NAEP in what students must do to demonstrate their comprehension. While success in IEA depends on reaching and correctly answering more questions directly related to the passage, to reach NAEP's advanced level, 4th grade students, for example,

> *. . . were able to interpret and examine the meaning of text. They summarized information across whole texts, developed their own ideas about textual information, understood some literary devices, and were beginning to formulate more complex questions about text.*[11]

Eighth graders go even further. They

> *. . . compared and contrasted information across multiple texts. They could connect inferences with themes, understand underlying meanings, and integrate prior knowledge with text interpretations. They also demonstrated some ability to evaluate the limitations of documents.*[12]

Equally important is the fact that NAEP requires students to generate answers in their own words much more frequently than IEA, which mainly asks students to respond to the test designers' options. Thus the skills required by IEA reading tasks can be seen as a subset of those required by NAEP.

So that the reader might better understand the differences between the test instruments, we have reproduced a passage and its associated questions from both the IEA and NAEP tests. **Exhibit 2**, *Grandpa*, drawn from the IEA 4th grade test, was submitted by the Danes. It is a folk story and describes family relationships. **Exhibit 3**, *Sybil Sounds the Alarm*, a story set during the American Revolution, was drawn from the NAEP 4th grade test. While both sets of items are based on complete stories, the selection from NAEP is a longer, more well-developed story and includes more information that is probably less familiar to the intended student audience.

The questions related to the NAEP passage are also more diverse in nature. As seen in NAEP questions 3 and 7, students must go beyond the information in the passage and compare it to knowledge they have from other sources, even if it is only their own experience, in order to answer the question. Reading experts would point out that because many of these questions have students recall and construct their answers, the students are more likely to be actively engaged in what they have read. In contrast, only the final question associated with Grandpa asks that students construct their own response. However, it is important to note that this item was not included in the international scale and was only included in select countries (the United States among them) for separate special analyses.*

*A full discussion of the open-ended IEA items may be found in Chapter 5 of *Methodological Issues in Comparative Educational Studies: The Case of the IEA Reading Literacy Study.*

Exhibit 2

A Story on the IEA Test for 4th Graders

Grandpa

Once upon a time, there was a very old man. His eyes had become weak. His ears were deaf, and his knees would shake. When he sat at the table, he was hardly able to hold the spoon. He spilled his soup on the tablecloth, and he often slobbered.

He lived with his son and daughter-in-law. They also had a small boy who was four years old, so the old man was a grandfather.

His son and his son's wife found it disgusting to see him spilling food at the table. And so they finally ordered him to sit in a corner behind the stove. Here, they served him his food on a small earthenware plate. Grandpa didn't even get enough to satisfy his hunger. He sat there feeling sad. He looked at the table, when the others were eating, and his eyes filled with tears.

Then, one day his shaking hands could not even hold the plate. It fell to the floor and was broken into many pieces. The young wife scolded him. But the grandfather said nothing. He just sighed. Then the young wife bought him a very cheap wooden bowl. Now he had to eat from that.

One day, while they were having dinner, the grandchild sat on the floor and was very busy with some small pieces of wood.

"What are you doing?" asked his father.

"I am making a bowl," the boy answered.

"What is it for?"

"It is for my father and mother to eat from when I grow up."

The man and his wife looked at each other for a long time.

Then they started crying. At once, they asked the old grandpa back to the table, and from then on he always ate with them. After that, even if he sometimes spilled his food, they never said a word about it.

1. What happened when Grandpa sat at the table?
   A. He always had a good meal.
   B. His feet would shake.
   C. He spilled his soup.
   D. He dropped his plate.

2. The son and his wife asked Grandpa to sit behind the stove because
   A. it was warmer there.
   B. the table was not big enough for everyone.
   C. he could not see or hear.
   D. they did not like to see him eat.

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A Story on the IEA Test for 4th Graders (continued)

3. Why did the son's wife scold Grandpa?
   A. He spilled his soup.
   B. He broke his plate.
   C. He looked so sad.
   D. He showed bad manners.

4. Grandpa was given a new bowl made of wood because
   A. he wanted such a bowl.
   B. the family had no more earthenware plates.
   C. a wooden bowl does not break so easily.
   D. they boy had made one for him.

5. How did Grandpa feel when he sat by the stove?
   A. Bored
   B. Tired
   C. Pleased
   D. Unhappy

6. The son and his wife cried because
   A. the boy wanted to make a wooden bowl.
   B. their father could not eat properly.
   C. they understood that they too would grow old.
   D. the wooden bowl was also broken.

7. Why did the parents decide to ask Grandpa back to the table? Write your answer on the lines below. Make sure you write enough to make your answer clear. You may want to use examples from the story to help explain your answer.

_____
_____
_____
_____
_____

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report*. Washington D.C., 1994.

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A Story on the NAEP Test for 4th Graders

Sybil Sounds the Alarm

by Drollene P. Brown

A red sky at night does not usually cause wonder. But on the evening of April 26, 1777, the residents of Ludingtons' Mills were concerned. The crimson glow was in the east, not from the west where the sun was setting.

The Ludington family sat at supper, each one glancing now and again toward the eastern window. Sybil, at sixteen the oldest of eight children, could read the question in her mother's worried eyes. Would Henry Ludington have to go away again? As commander of the only colonial army regiment between Danbury, Connecticut, and Peekskill, New York, Sybil's father did not have much time to be with his family. Thudding hooves in the yard abruptly ended their meal. The colonel pushed back his chair and strode to the door. Although Sybil followed him with her eyes, she dutifully began to help her sister Rebecca clear the table.

The girls were washing dishes when their father burst back into the room with a courier at his side.

"Here, Seth," said the colonel, "sit you down and have some supper. Rebecca, see to our weary friend."

Sybil, glancing over her shoulder, saw that the stranger was no older than she. A familiar flame of indignation burned her cheeks. Being a girl kept her from being a soldier!

Across the room, her parents were talking together in low tones. Her father's voice rose.

"Sybil, leave the dishes and come here," he said.

Obeying quickly, she overheard her father as he again spoke to her mother.

"Abigail, she is a skilled rider. It is Sybil who has trained Star, and the horse will obey her like no other."

"That red glow in the sky," Colonel Ludington said, turning now to his daughter, "is from Danbury. It's been burned by the British raiders. There are about two thousand Redcoats, and they're heading for Ridgefield. Someone must tell our men that the lull in the fighting is over; they will have to leave their families and crops again."

"I'll go! Star and I can do it!" Sybil exclaimed. She faced her mother. "Star is sure of foot, and will carry me safely."

"There are dangers other than slippery paths," her mother said, softly. "Outlaws or deserters or even British soldiers may be met. You must be wary in a way that Star cannot."

A lump rose in Sybil's throat. "I can do it," she declared.

Without another word, Abigail Ludington turned to fetch a woolen cape to protect her daughter from the wind and rain. One of the boys was sent to saddle Star, and Sybil was soon ready. When she had swung up on her sturdy horse, the colonel placed a stick in her hand.

As though reciting an oath, she repeated her father's directions: "Go south by the river, then along Horse Pound Road to Mahopac Pond. From there, turn right to Red Mills, then go North to Stormville." The colonel stood back and saluted. She was off!

At the first isolated houses, windows or doors flew open as she approached. She shouted her message and rode on. By the time she reached the first hamlet, all was dark. There were many small houses there at the edge of Shaw's Road, but everyone was in bed. Lights had not flared up at the sound of Star's hoofbeats. Sybil had not anticipated this. Biting her lower lip, she pulled Star to a halt. After considering for a moment, she nudged the horse forward, and riding up to one cottage after another, beat on each door with her stick.

"Look at the sky!" she shouted. "Danbury's burning! All men muster at Ludington's!"

At each village or cluster of houses, she repeated the cry. When lights began to shine and people were yelling and moving about, she would spur her horse onward. Before she and Star melted into the night, the village bells would be pealing out the alarm.

Paths were slippery with mud and wet stones, and the terrain was often hilly and wooded. Sybil's ears strained for sounds of other riders who might try to steal her horse or stop her mission. Twice she pulled Star off the path while unknown riders passed within a few feet. Both times, her fright dried her mouth and made her hands tremble.

By the time she reached Stormville, Star had stumbled several times, and Sybil's voice was almost gone. The town's call to arms was sounding as they turned homeward. Covered with mud, tired beyond belief, Sybil could barely stay on Star's back when they rode into their yard. She had ridden more than thirty miles that night.

In a daze, she saw the red sky in the east. It was dawn. Several hundred men were milling about. She had roused them in time, and Ludington's regiment marched out to join the Connecticut militia in routing the British at Ridgefield, driving them back to their ships on Long Island Sound.

Afterward, General George Washington made a personal visit to Ludingtons' Mills to thank Sybil for her courageous deed. Statesman Alexander Hamilton wrote her a letter of praise.

Two centuries later visitors to the area of Patterson, New York, can still follow Sybil's route. A statue of Sybil on horseback stands at Lake Gleneida in Carmel, New York, and people in that area know well the heroism of Sybil Ludington. In 1978, a commemorative postage stamp was issued in her honor, bringing national attention to the heroic young girl who rode for independence.

From Cobblestone's September, 1983 issue, "Patriotic Tales of the American Revolution." Copyright 1983, Cobblestone Publishing Inc., Peterborough, NH 03548. Reprinted by permission of the publisher.

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A Story on the NAEP Test for 4th Graders (continued)

1. What are the major events in the story?

2. Sybil's father thought that she
   a. was obedient but forgetful
   b. was courageous and a good rider
   c. could lead the troops against the British
   d. could easily become angry

3. Could a similar story take place today? Tell why or why not.

4. Sybil's ride was important mainly because
   a. she rode about 30 miles
   b. she was exhausted when it was over
   c. the British lost at Ridgefield
   d. her mother allowed her to ride after all

5. The red glow that the Ludingtons watched during supper was caused by
   a. the sunset
   b. a severe storm
   c. a warning bonfire
   d. a burning town

6. How does the author show the excitement and danger of Sybil's ride?

7. If you had just finished a ride like Sybil's how would you feel and why?

8. The information about the statue and the stamp helps to show that
   a. people today continue to recognize and respect Sybil's bravery
   b. people were surprised that George Washington honored her
   c. the author included minor details
   d. heroes are honored more now than they were then

9. Why do you think the author called this story "Sybil Sounds the Alarm"? Use what you learned in the passage to support your answer.

SOURCE: Williams, P.L., Reese, C.M., Campbell, J.R., Mazzeo, J., and Phillips, G.W. (1995). *1994 NAEP Reading: A First Look—Findings from the National Assessment of Educational Progress*. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

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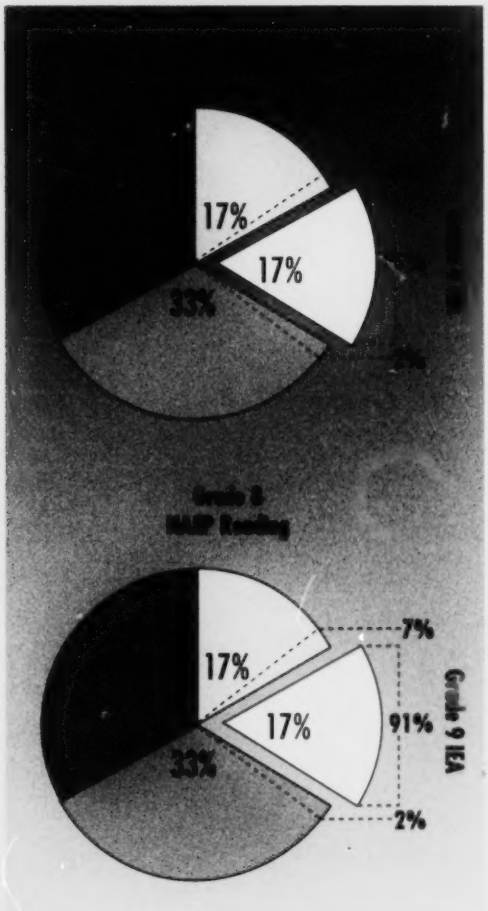
Figure 7

IEA and NAEP Item Overlap



SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report.* Washington D.C.: 1994.

Differing Emphases. To explore the differences between the IEA and NAEP tests systematically, a committee of experts categorized IEA items according to NAEP specifications. Their findings are represented in **Figure 7**, which shows clearly that IEA test items tend to be located in only one of the NAEP categories—developing an interpretation. More than 90 percent of the IEA items assess tasks seen in only 17 percent of NAEP items. Further, virtually all the IEA items are aimed solely at literal comprehension and interpretation. Items of that kind make up only one-third of NAEP reading assessments.

As compared to the NAEP test, the IEA test measures only basic reading processes. NAEP requires students to demonstrate these basic skills as well, but also asks for evidence of more complex levels of understanding. This difference in emphasis between the two tests is further illustrated by consideration of the distribution of items on a difficulty scale. Ideally a test would include items at all points where students can be expected to perform. In this way, we could clearly order the performance of students. In the IEA test items did not cover the entire expected ability range. Many American students got every item correct. Consequently their score on the IEA Reading Literacy Test was extrapolated. In contrast, the range of item difficulty on the NAEP reading assessment exceeds the ability of most American students. Few, if any, students would correctly answer all items.

One might wonder whether students in the other participating countries would do better than American students on the standards set by NAGB. There is a high probability that the rank ordering or relative performance of countries would remain pretty much the same.* Therefore, it seems reasonable to conclude that American students would do well as compared to students in other countries even if the NAEP test had been administered.

* This statement is derived from the theoretic underpinnings of Item Response Theory and its application to the scaling used for both the IEA Reading Literacy Test and the NAEP Reading Assessment.

Comparisons with OECD Nations

Heightened competition in a global economy has stimulated public interest in "world-class standards" for American students. Many policymakers and industrial leaders worry about our ability to maintain our scientific, technological, and economic edge in the world economy into the 21st century. They have pressed for the establishment of benchmarks against which the learning of U.S. students could be measured, the performance of our school systems monitored, and the nation's stock of human capital measured over time.

An international average might be considered a useful benchmark. The IEA study, however, does not provide the basis for a particularly meaningful benchmark. The 32 nations are a self-selected group that are neither a representative sample of all nations nor of our principal trading partners (for example, Japan, the United Kingdom, and Mexico are not included).

For the purposes of stimulating further discussion of appropriate world standards, we have capitalized on the fact that 18 of the 32 nations participating in the study are also members of the Organization for Economic Cooperation and Development (OECD)* to construct an OECD average. Using the OECD average as a reference point, we can make comparisons of the performance of American students overall, and that of particular American subpopulations, against a meaningful benchmark.

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*The Organization for Economic Cooperation and Development includes the following countries that participated in the IEA Reading Literacy Study: Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, and the United States. The remaining, nonparticipating OECD member countries are Australia, Austria, Japan, Luxembourg, Mexico, Turkey, and the United Kingdom.

American Students and the OECD Average

Figures 8 and 9 show the distribution of reading comprehension scores for American 4th and 9th graders, respectively, in each of the three domains of reading. The U.S. mean is higher than the OECD mean in each instance, and the difference is statistically significant for all except 9th grade documents comprehension. These differences are reflected in the percentages of the U.S. student populations performing at or above the OECD mean—about 60 percent of 4th graders in the narrative and expository domains and 70 percent for documents. For 9th graders the parallel figures range between 52 and 55 percent.

Apparently, American 4th grade students learn basic reading skills better than do their peers in other OECD countries. However, American 9th grade students do not hold as large a comparative advantage relative to their peers in other OECD countries.

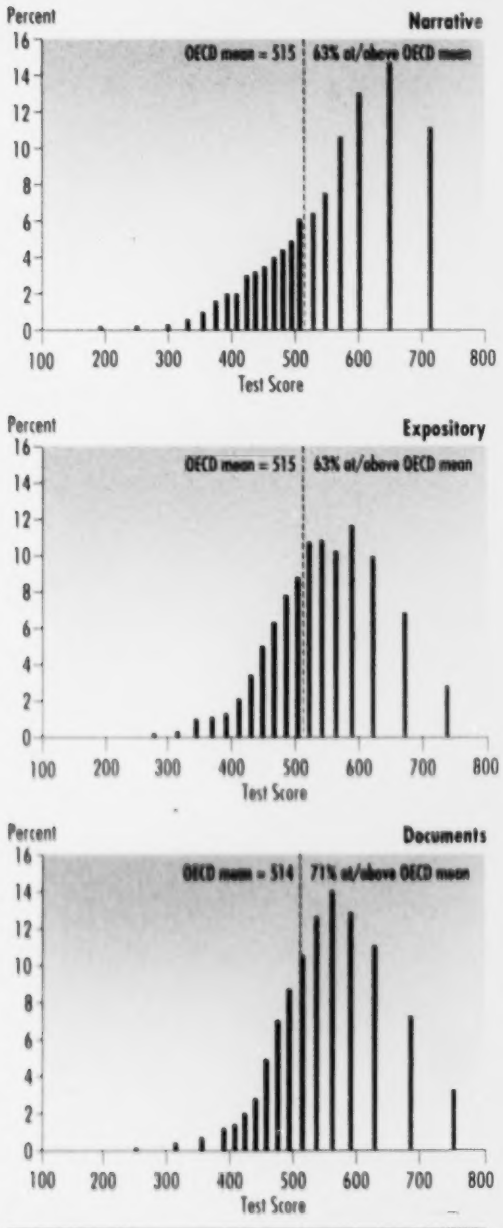
American Subpopulations and the OECD Average

Concerns about inequities in the American educational system have aroused interest in how various sectors of the student population fare in school. To examine that issue, Figures 10 through 19 illustrate the average levels of reading comprehension found in subpopulations defined by race/ethnicity, gender, parents' education, family wealth, and family structure. These displays allow comparisons between the subpopulation groups themselves and of each with the OECD mean.

Before proceeding to these findings, a note on how to read Figures 10 through 19 may be helpful. In each of the figures, we show two kinds of mean scores: a single mean for the OECD countries, represented by a broken horizontal line across the figure; and a mean score for each of the subpopulation groups examined. Each estimate of the group mean is shown as a white horizontal line within a vertical shaded band. The shaded area indicates the confidence interval of the mean—the range in which the true mean score of that subpopulation group is most likely to occur. When the shaded areas for different groups do not overlap, the two groups are significantly different. Generally, if the two shaded areas do overlap, the two groups are not significantly different. However, if the overlap is small, the groups may still be significantly different and a significance test can be done to determine significance.

Figure 8

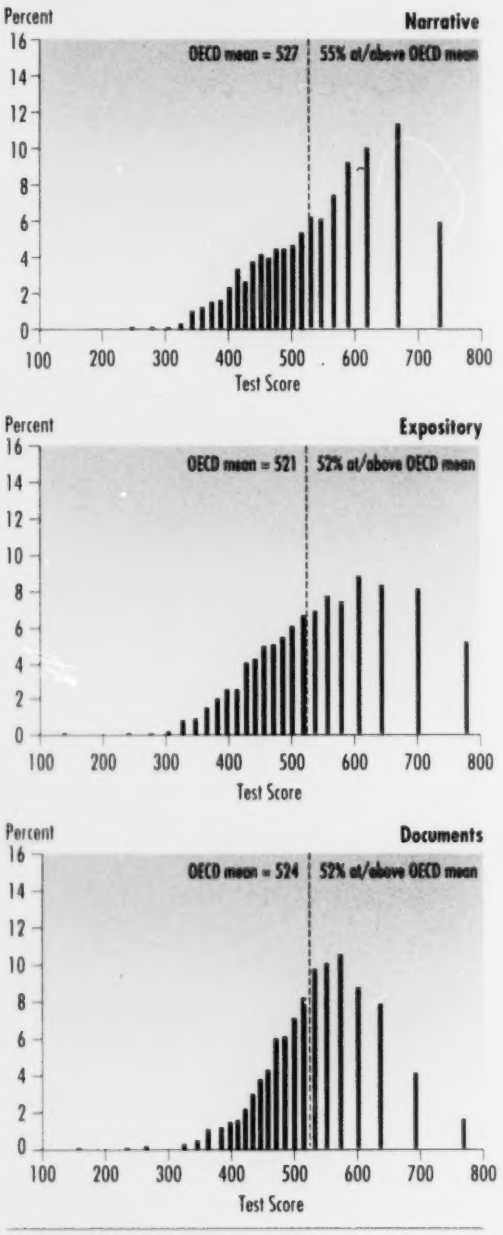
Distribution of 4th Grade Reading Achievement Scores



SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report*. Washington D.C.: 1994.

Figure 9

Distribution of 9th Grade Reading Achievement Scores



SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report*. Washington D.C.: 1994.

Race/Ethnicity. **Figures 10 and 11** display the mean performance levels of the three main racial/ethnic groups identified in the study—whites, blacks, and Hispanics.* These data make it clear that at both grade 4 and grade 9 the performance of the average white student significantly exceeds that of the average black student and the average Hispanic student in each domain of reading comprehension. Differences between the two minority groups themselves reach statistical significance in only two instances—among 4th graders, where Hispanic students do better than black students on narrative and documents comprehension. These findings confirm a pattern that emerges in most studies of school achievement in the United States, and one that is seen in the 1992 NAEP Reading Assessments.[13]

In both grades 4 and 9, the data also show that the average white student always does better than the average OECD student. In fact, about 70 percent of white 4th graders equal or exceed the OECD average in each domain of reading comprehension. White U.S. 9th graders do nearly as well; about 60 percent of them do as well or better than the average OECD student.**

The average black student, however, fares less well in these comparisons. The mean performance of black 4th and 9th graders is always below the OECD mean, and the differences are statistically significant, with one exception (4th grade narrative comprehension). Seen another way, these data point out that less than 40 percent of black 4th graders are the equal or better of the average OECD student in their comprehension of text. At 9th grade, the comparable figure is 30 percent or less.

For the most part the average Hispanic student reads at about the same level as the average OECD student. However, the data do show that for 4th grade narrative comprehension they do significantly better, and for 9th grade documents comprehension they do significantly worse. In fact, close to 50 percent of Hispanic 4th graders and somewhat less than 40 percent of Hispanic 9th graders read as well or better than the average OECD student.***

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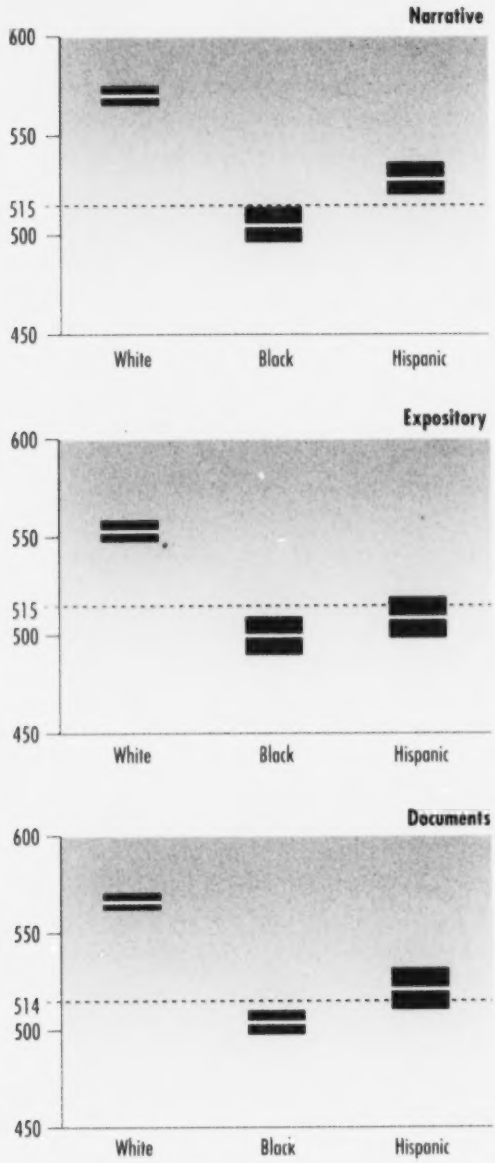
* While the groups Asian/Pacific Islanders and American Indian/Alaskan Natives were identified in the sample, their numbers were small and are omitted from consideration in this report; details on these groups are provided in *Reading Literacy in the United States: Technical Report.*

**In most instances the situation is similar on each of the three domains of reading comprehension. To simplify the discussion, we often describe all three domains with a single approximate statement such as this.

*** The significance tests used take into account that there are multiple comparisons being made. A more stringent criterion is applied under these circumstances. This may result in a group that appears in the figures to differ from the OECD mean not achieving statistical significance when the multiple comparisons are accommodated, as is the case here for 9th grade narrative for Hispanic students. This apparent anomaly appears in several places throughout this volume. In each case the conclusions in the text are based on the appropriate tests of statistical significance.

Figure 10

4th Grade Narrative, Expository, and Documents Scores by Race/Ethnicity

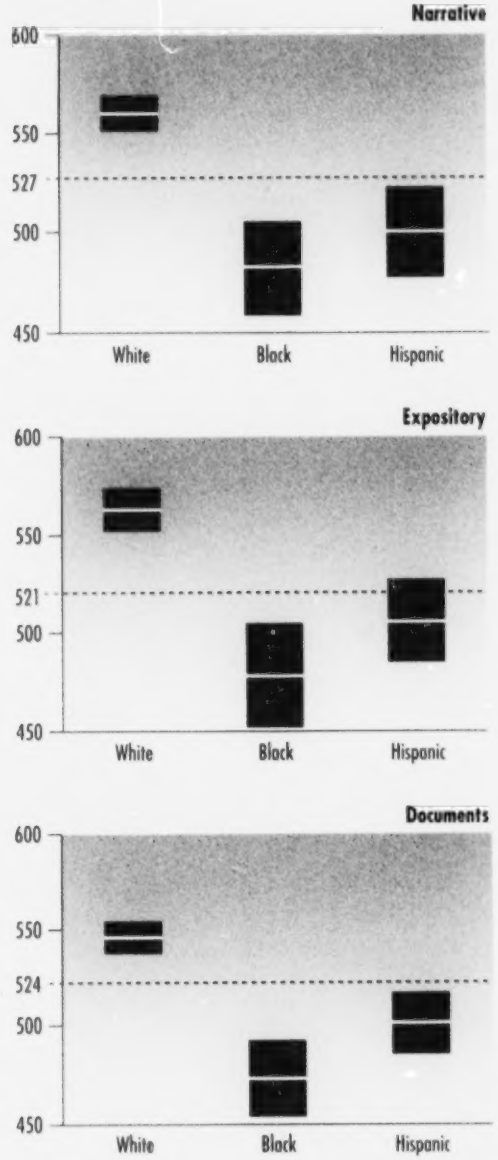


NOTE: Mean achievement shown as a white line set within confidence limits shown as a shaded area around the mean.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report*. Washington D.C.: 1994.

Figure 11

9th Grade Narrative, Expository, and Documents Scores by Race/Ethnicity



NOTE: Mean achievement shown as a white line set within confidence limits shown as a shaded area around the mean.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report*. Washington D.C.: 1994.

Findings such as these highlight the persistent problem of racial/ethnic educational disadvantage within the United States. This disadvantage takes on additional meaning through comparisons with the OECD average. Our sense of fair play and our international competitiveness both suffer in the face of a situation where 60 to 70 percent of white students score at or above this OECD average, but only 25 to 40 percent of black students and 35 to 50 percent of Hispanic students achieve the same standard. The problem takes on even greater importance when we consider how quickly our minority population is growing.

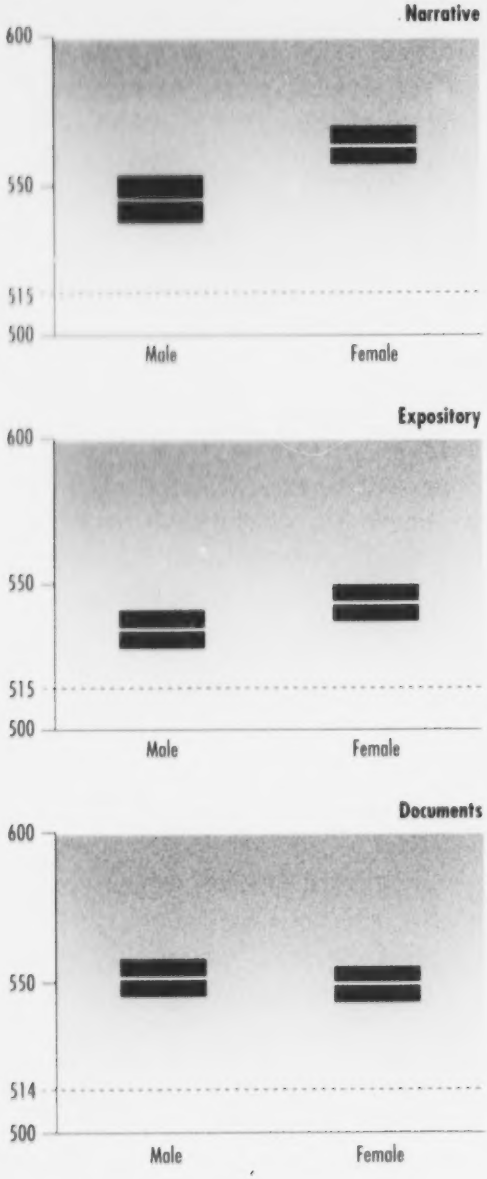
Gender. **Figures 12 and 13** display the average reading performances of 4th and 9th grade boys and girls in each of the three domains. Historically, girls have outperformed boys when the task involved the reading of stories (narrative text), and the data tend to confirm this observation. Among 4th graders, girls do better than boys on narrative and expository but not documents comprehension. At 9th grade, females exceed males only in narrative comprehension.

Both 4th grade boys and 4th grade girls do consistently better, on average, than the average OECD student. Among 9th graders, girls better the OECD mean on narrative and expository comprehension. In comparison the average U.S. male 9th grader differs significantly from the average OECD student only with respect to expository comprehension.

From the perspective of how many U.S. students do as well or better than the average OECD student, the situation is as follows. In order of the three reading domains tested (narrative, expository, documents) the percentages of 4th grade girls at or above the OECD mean are 67, 65, and 60 percent. The comparable figures for 4th grade boys are about 60 percent. At the 9th grade, the pattern is similar but the advantage is smaller. The percentages of girls and boys at or exceeding the OECD mean in each domain are as follows: for girls, 61, 53, and 53 percent; for boys, about 50 percent in each case.

Figure 12

4th Grade Narrative, Expository, and Documents Scores by Gender

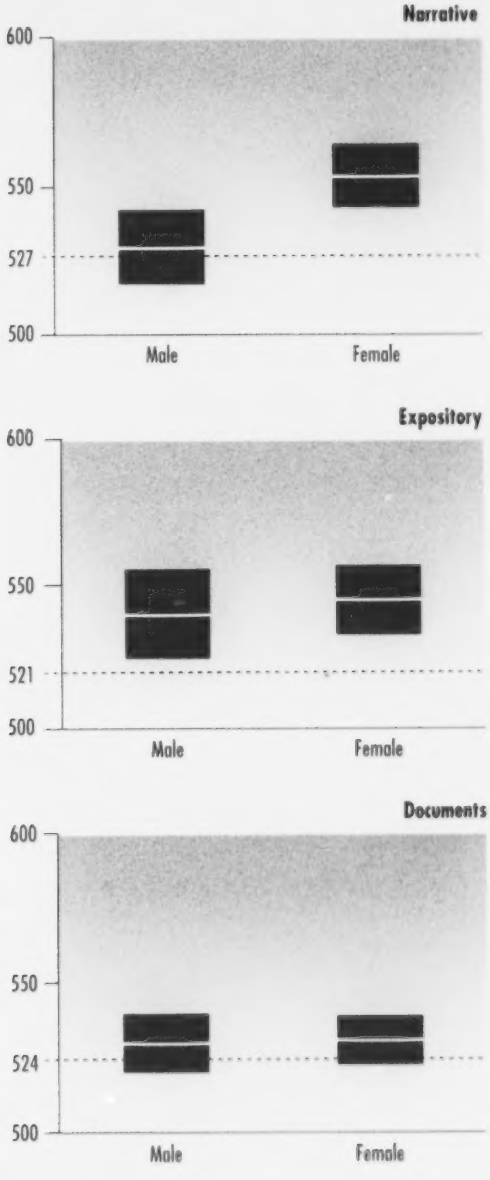


NOTE: Mean achievement shown as a white line set within confidence limits shown as a shaded area around the mean.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report.* Washington D.C.: 1994.

Figure 13

9th Grade Narrative, Expository, and Documents Scores by Gender



NOTE: Mean achievement shown as a white line set within confidence limits shown as a shaded area around the mean.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report.* Washington D.C.: 1994.

Parents' Education and Family Wealth. The connection between school learning and parents' social and economic statuses is well established. Parental occupation and education figure prominently as indicators of social status, while income is often considered a common indicator of economic status. Given the widespread concern about the effects of educational, social, and economic disadvantage in American life, we examine the linkage of parental educational and economic attainments to reading comprehension.

Students' reports of their *parents' education* levels are the best measure of social status available to us. The mean reading scores for each of several steps on the ladder of educational attainment are presented separately for father's and mother's education in **Figures 14 and 15**.

Irrespective of whether we consider father's or mother's level of education, the relationship between the social status of the family—and hence of the student—and the student's ability to comprehend written text is straightforward. In general, as the education level of the student's parents increases, so does the student's own level of reading comprehension. For the purposes of the discussion that follows we focus on mother's education; however, essentially the same findings hold for father's education.

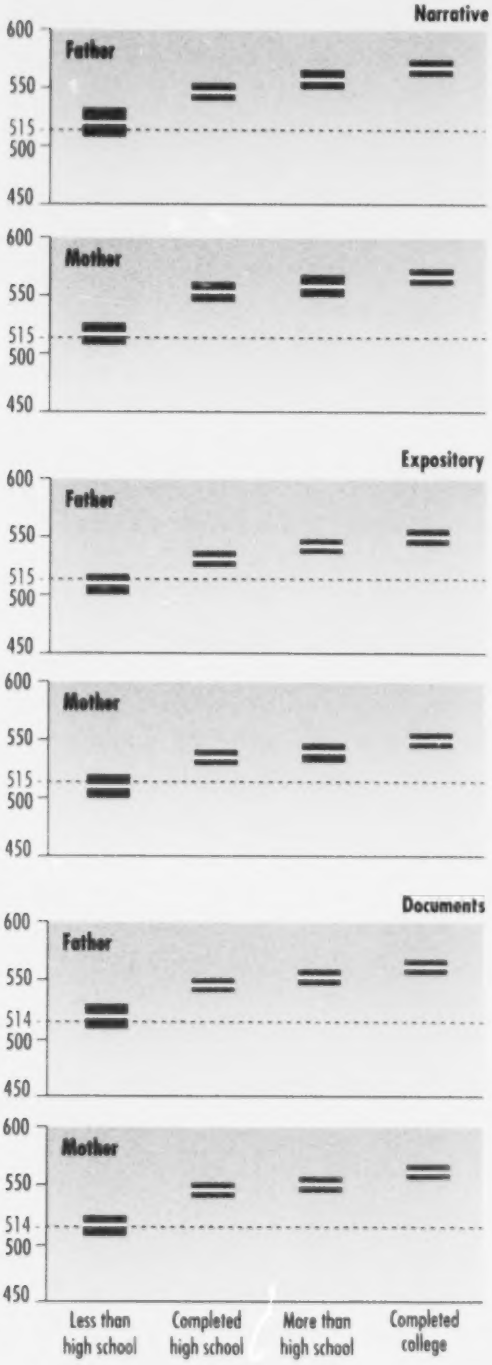
Fourth graders whose mothers have not completed high school are the only ones whose average level of reading comprehension does not exceed the OECD mean. Even so, the average student in this group reads at about the same level as the average OECD student.

Among 9th graders, however, this same group of students reads consistently less well than the typical OECD student. Ninth graders whose mothers have completed high school read at about the same level as the average OECD student and, for the two highest education groups, at a level on average above that of the typical OECD student (with one exception—documents comprehension for the lower of these two groups).

From the perspective of the proportions of students who do as well or better than the average OECD student, among 4th graders whose parents are college graduates, two in every three equal or exceed the OECD average. At the other end of the parent education range, some 40 to 50 percent equal or better the OECD mean. In the 9th grade, only about one in three of such students reads at or above the OECD average.

Figure 14

4th Grade Narrative, Expository, and Documents Scores by Parents' Education

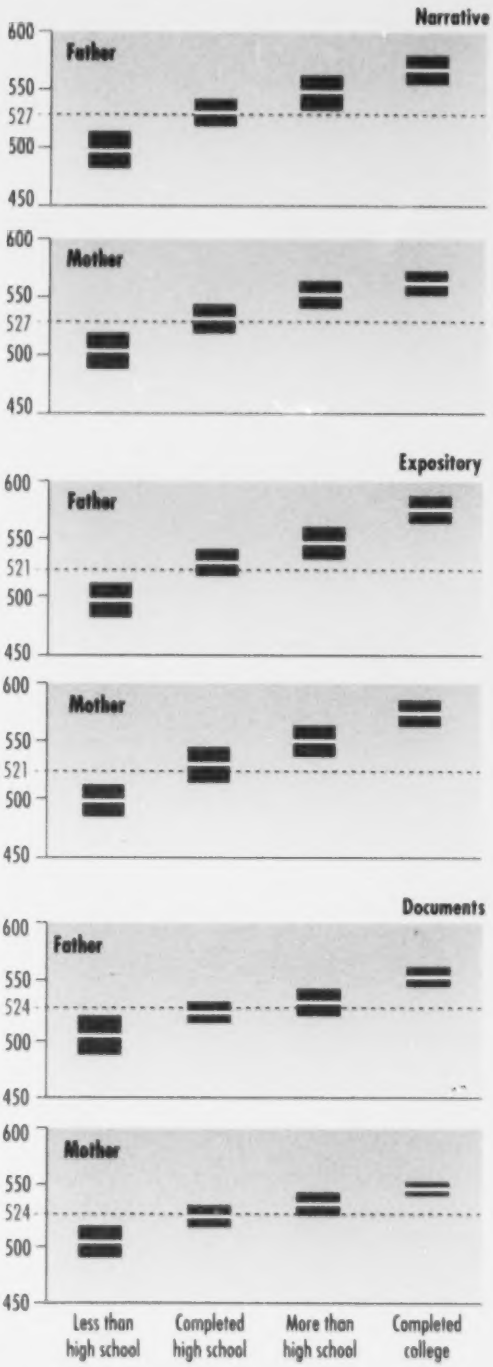


NOTE: Mean achievement shown as a white line set within confidence limits shown as a shaded area around the mean.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report*. Washington D.C.: 1994.

Figure 15

9th Grade Narrative, Expository, and Documents Scores by Parents' Education



NOTE: Mean achievement shown as a white line set within confidence limits shown as a shaded area around the mean.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report*. Washington D.C.: 1994.

A similar pattern emerges when we consider *family wealth*. Using an indirect measure of family wealth, we have defined four groups based on quartiles*—students in the lowest 25 percent we call poor; those in the highest 25 percent we call rich; those in the second and third quartiles are simply designated as quartiles 2 and 3. The mean performance levels of 4th and 9th graders in each of the three domains, by level of family wealth, are shown in **Figures 16 and 17**.

The relationship between family wealth and reading comprehension is clear: reading comprehension appears to increase as the level of family wealth increases. For 4th graders in every domain, the poor are outperformed by everyone else, quartile 2 outperforms the poor but is exceeded by quartile 3 and the rich. While those in quartile 3 and the rich outperform everyone else, there are no differences between them. For 9th graders the poor are always outperformed by the rich and are outperformed by those in the third quartile on narrative and documents, and they are also outperformed by those in quartile 2 in documents.

Despite the consistent degree of disadvantage associated with being poor relative to their wealthier peers within the United States, the average reading performance of this most economically disadvantaged group never falls significantly below the OECD average. Further, in all family wealth groups other than this one, for all three domains and both grade levels, the average student's performance always exceeds that of the average OECD student.

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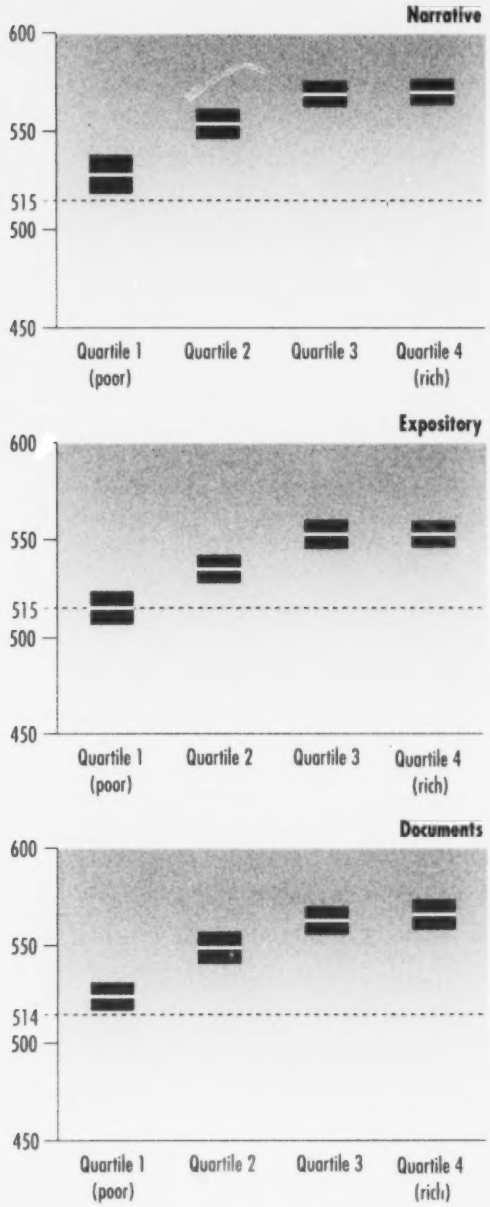
* An indirect measure of family wealth based on household possessions was used in this instance. The four groups shown were defined by quartiles on the distribution of this measure with poor being the lowest quartile and rich the highest.

Figure 16

4th Grade Narrative, Expository, and Documents Scores by Family Wealth

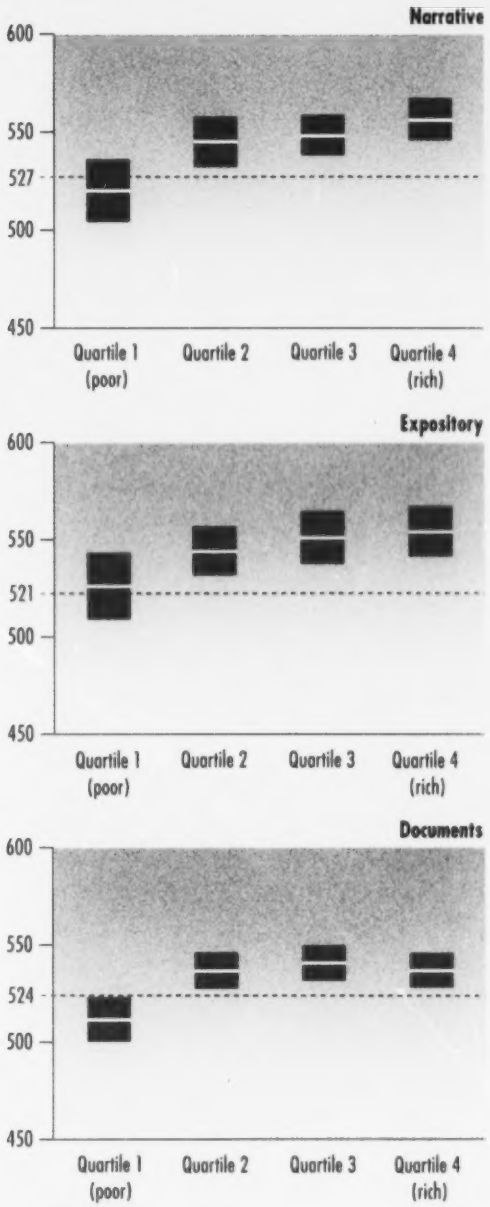


NOTE: Mean achievement shown as a white line set within confidence limits shown as a shaded area around the mean.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report*. Washington D.C.: 1994.

Figure 17

9th Grade Narrative, Expository, and Documents Scores by Family Wealth



NOTE: Mean achievement shown as a white line set within confidence limits shown as a shaded area around the mean.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report*. Washington D.C.: 1994.

Family Structure. During the past few decades, the number of families that differ from the traditional two-parent, nuclear family has dramatically increased with presumed negative consequences for children's learning. In the analyses below we examine this issue by looking at how the level of reading comprehension differs among children from different family structures.

Four family configurations were identified from the students' reports of other people present in the same household and their relationships to the student. Thus, the distinction between biological parents and stepparents or guardians is one based on the students' perceptions.

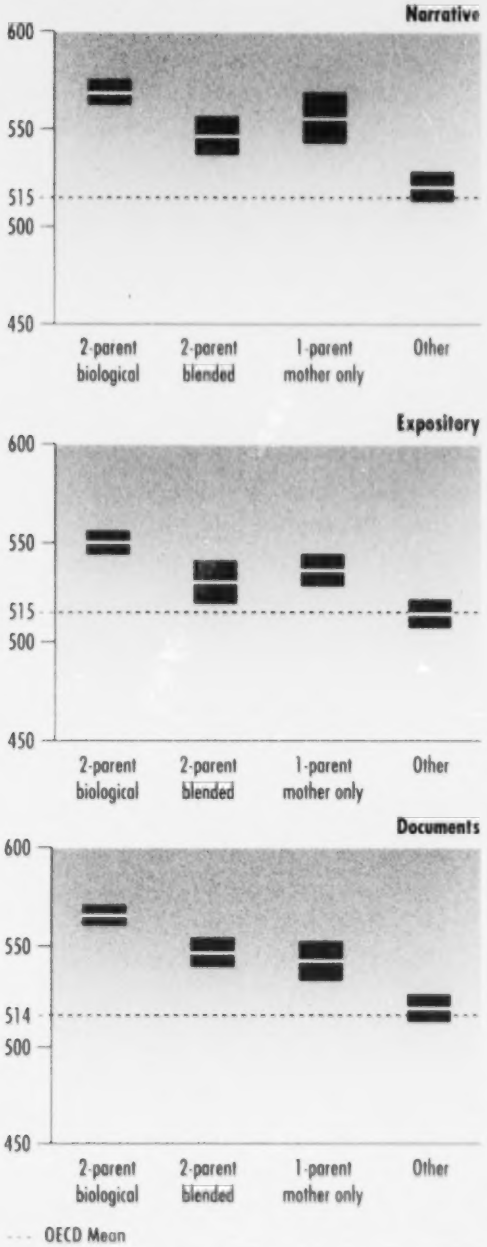
- *Two-parent biological families*—both biological parents are present.
- *Two-parent blended families*—one or both of the parents is a stepparent or guardian.
- *One-parent mother-only families*—single-parent families headed by mothers.
- *Other*—father-only families as well as other configurations not described above.

Figures 18 and 19 show the trends in average levels of reading achievement across the four different family configurations, and although the average level of reading comprehension has a tendency to decrease as one moves from the two-parent categories across to the "other" category, especially among 9th graders, there is considerable overlap between the four family types.

Among 4th graders, two-parent biological families have an apparent advantage over all other kinds of family structure. This difference is significant for all three domains, with the exception that students of two-parent biological families do not differ significantly from the one-parent mother-only group on the narrative scale. Coming from a two-parent blended family appears to offer no advantage relative to living in a one-parent mother-only family structure. The family structure that appears to have the lowest mean achievement is the one we have labeled as "other"—families that students say have other combinations of adults with varying degrees of relationship to the student. In all except one comparison, these students do not read as well as students from other family types.

Figure 18

4th Grade Narrative, Expository, and Documents Scores by Family Structure

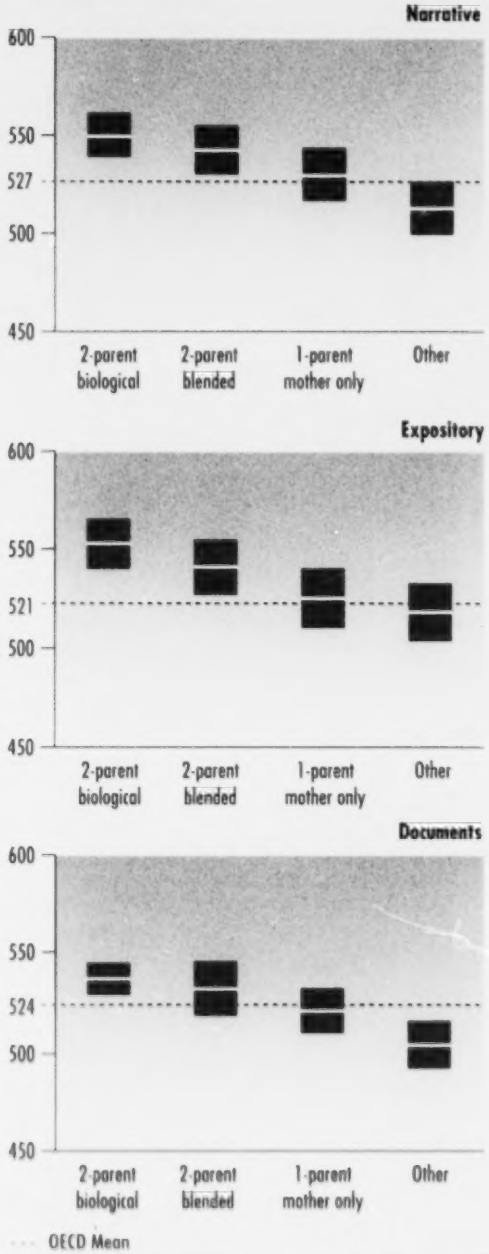


NOTE: Mean achievement shown as a white line set within confidence limits shown as a shaded area around the mean.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report*. Washington D.C., 1994.

Figure 19

9th Grade Narrative, Expository, and Documents Scores by Family Structure



NOTE: Mean achievement shown as a white line set within confidence limits shown as a shaded area around the mean.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report*. Washington D.C., 1994.

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Family structure appears to play a less important role for 9th graders. For the most part those 9th grade students who come from other families seem to be at a disadvantage as compared to their peers in two-parent biological and blended families. However, their level of reading achievement does not differ significantly from that of students in one-parent mother-only families. Ninth graders in one-parent mother-only families do not do as well in expository comprehension as those in two-parent biological families.

As compared to their peers in OECD countries, the average 4th and 9th grader from a two-parent biological family exceeds the OECD average, as do 4th graders from two-parent blended and one-parent mother-only families. Students from families designated "other" do not exceed the OECD average and even fall below it in one instance (documents comprehension at grade 9). Among 9th graders those from one-parent mother-only families on average do not read better or worse than the typical OECD student.

In terms of the numbers or proportions of students at or above the OECD mean, where less than 50 percent of 4th graders in the other group meet or exceed the OECD average, 55 to 70 percent of students from the remaining three family structures achieve this status. For 9th graders, the analogous percentages of students equaling or exceeding the OECD average in each domain are 5 to 20 percentage points lower than those for 4th graders.

The message emerging from these comparisons appears to be consistent with the belief that two-parent biological families offer children some advantages over other family structures, though the advantage is relatively minor for all groups except the configuration identified as "other". The advantage is most apparent among 4th graders. We explore this matter further in analyses reported below.

American Reading Literacy Achievement in an International Perspective

It is indisputable. American 4th and 9th grade students read well compared to their counterparts in the countries taking part in the IEA International Reading Literacy Study. Although the IEA test may not have stretched this country's students to their max-

imum, American students have, on the whole, turned in a creditable performance. We also know that compared to OECD countries, American 4th and 9th grade students frequently do better than simply holding their own. While 4th graders consistently exceed the OECD average, U.S. students at the 9th grade do not hold as large a comparative advantage—their achievement is not consistently superior to that of students in OECD nations. By this standard the only markedly disadvantaged groups in the United States are blacks and students whose parents have low levels of education.

By our own standards, however, we see educational disadvantage more broadly in the differences between American subpopulation groups. The typical white student has a higher level of reading comprehension than the typical black or Hispanic student. Females read and comprehend narrative text better than males. Students whose mothers or fathers have a college degree read better, for the most part, than students whose mothers or fathers have failed to complete high school. Students whose families are poor do not read as well as those whose families are better off.

These relatively simple demonstrations of differences among subpopulation groups suggest social, educational, and economic disadvantage at work. But this simple picture hides some complexities. For example, these separate aspects of disadvantage are often confounded with each other. Racial/ethnic disadvantage, for example, often contains a large component of socioeconomic disadvantage. Poor families are more likely to be those in which parents also have low levels of education. One-parent mother-only families are more likely to suffer economic disadvantage than two-parent families. And so on. In the following pages, we set forth another series of analyses designed to disentangle some of these multiple aspects of advantage and disadvantage. By so doing, we hope to come a step closer to identifying some of the reasons why American students vary in their capacity to read and understand written text.

Reading Literacy in the United States

Demonstrating that nations, and student groups within nations, differ in their average levels of reading comprehension serves as an initial indication of whether there may be a problem in an education system. As shown in the preceding section of this report, among the nations participating in the IEA International Reading Literacy Study, American students on average do as well as or better than most, and even our most disadvantaged student groups read well compared to the average OECD student. Still, not all U.S. students understand written text equally well and some readily defined student groups differ substantially from each other in this respect.

Findings that show within-nation differences between student groups raise questions. For example, are all student groups being provided equal access and opportunity to learn? Considerations of this kind drive research that seeks to *explain* why groups of U.S. students differ in their reading comprehension.

In this section of the report, we move closer to accounting for differences between U.S. student groups in their reading comprehension. We build our explanation from very basic elements—the relationships between reading comprehension and a variety of attributes of students, families, communities, schools, and teachers. Prior research and experience have led us to believe that the selected variables are each likely to make a difference in the development of these necessary reading comprehension skills. But any one variable, in and of itself, will not explain group differences. Instead, each of these variables operates within a web of relationships, all acting simultaneously and in ways that interact with each other. For example, the differences in achievement between racial/ethnic groups may in part be attributed to associated socioeconomic differences. Statistical procedures make it possible to disentangle the effect of each variable from other related variables. In this way we can consider the effect of each variable uncomplicated by confounding variables—we can look at the effect of racial/ethnic differences separate from other variables such as family wealth.

In the pages that follow, we have condensed findings from the larger set of analyses reported in *Reading Literacy in the United States: Technical Report*. In the interests of a simplified presentation, we have limited our data displays and discussion to narrative comprehension among 4th graders. With this as the focus, we look at its relationship to aspects of family background and disentangle the web of relationships by statistically isolating each variable from other related variables in order to estimate the effects of each variable as purely as possible, uncomplicated by

confounding influences. For example, we take out the part of racial/ethnic differences that is due to parallel socioeconomic differences. Similarly, we look at aspects of provision within schools and separate out that part due to provision alone from that part due to attributes of students themselves.

The discussion here centers on two basic sets of influences: (1) family influences on students, and (2) schools and communities as they influence both teachers and students. Using a large array of variables from both categories we constructed a two-level model of factors related to reading achievement. We have chosen to highlight the influence of four salient student and family variables—family structure, family wealth, race/ethnicity, and parents' education. Similarly, the discussion of community and school attributes is narrowed to three—parent involvement in the school, instructional time, and class size. In each case the unique relationship shown becomes apparent because of statistical controls on the full spectrum of variables listed in **Exhibit 4**.

Each presentation consists of two views of the highlighted relationship—*observed* averages based directly on the data as collected, and *adjusted* averages, which are an estimate of what the observed averages would be, other things equal. *Other things equal* means that we have statistically manipulated the data so that the effects of all the other variables listed in Exhibit 4 do not enter into the relationship being presented. Further, the performance of each subpopulation is shown relative to the overall average. Thus, one can readily see which groups do better or worse than U.S. students as a whole.

Exhibit 4

Variables Included in the U.S. IEA Analyses

Student Attributes	age, gender, race/ethnicity, mother tongue
Family Attributes	family structure, father's and mother's education, family wealth
Community Attributes	region, community resources, parental involvement
School and Class Attributes	public/private, minority composition, instructional time, library resources, specialist staff, principal's leadership style, class size

Family Influences

Given the amount of time children spend at home before they begin school and, later, outside of school hours, it is not surprising that the Commission on Reading reported that "parents play roles of inestimable importance in laying the foundation for learning to read."[14] There have been numerous studies related to family structure and school-related performance. Family structure has been looked at from many perspectives. These have included the number of parents in the home, the family size, the birth order, and gender distribution. These variables have been considered in relation to changes in economic status, parental time availability, and parental role models. In addition, the reasons for a particular family configuration, perhaps due to divorce or death, are considered to have an important impact on school-related performance.

Family Structure

Over the past three decades the structure of American families has changed dramatically. The picture of the nuclear family as a father, mother at home, and two children is being transformed as divorce rates, the number of children born to unwed mothers, and the number of mothers entering the labor force climb. The annual number of divorces increased approximately 120 percent between 1965 and 1989, and about 1 million children are involved in divorces each year.[15] While overall birth rates have been declining since 1950 (106.2 live births per 1,000 women in 1950 to 63.0 live births per 1,000 women in 1988), the number of births to unmarried women has been increasing (14.1 per 1,000 live births in 1950 to 38.6 per 1,000 in 1988).[16] And the labor force participation of women with children under 18 years of age has markedly increased from 11.8 million in 1970 to 22.3 million in 1991. As divorce, remarriage, and single-motherhood increase, and as women maintain their jobs throughout the period of child rearing, the families in which children learn to read take on an entirely new profile when compared to past generations.

Observers usually think the changes we are witnessing in American families have a negative impact on children's literacy development because they may reduce the level of parent-child interaction thought crucial to early language development and later progress in reading skill. Studies in support of this position are common. As a whole, the evidence supports the hypothesis that children of intact families do better than those in families where the parents have remarried.[17] While the research and literature as a whole tends in this direction, more recent work raises concerns about the validity of this position.[18]

As noted earlier four categories of family structure were distinguished:

- *Two-parent biological families*—both biological parents are present;
- *Two-parent blended families*—one or both of the parents is a stepparent or guardian;
- *One-parent mother-only families*—single-parent families headed by mothers; and
- *Other*—father-only families as well as other configurations not described above.

Figure 20 shows the relationship between family structure and narrative comprehension for 4th graders from the four types of families. The solid bars represent the *observed* average score for each of the four student groups. These mean scores are shown relative to the average score for all 4th graders—the horizontal broken line across the graph at zero on the comprehension scale.

Although these mean scores may not be significantly different from one another, it appears as if the observed mean for two-parent biological and one-parent mother-only families are above the average for all students, while those for two-parent blended and other families are below. Similarly, it appears that students from two-parent biological families do best, those from one-parent mother-only families are next, children from two-parent blended families are third, and those in other groupings show the lowest performance.

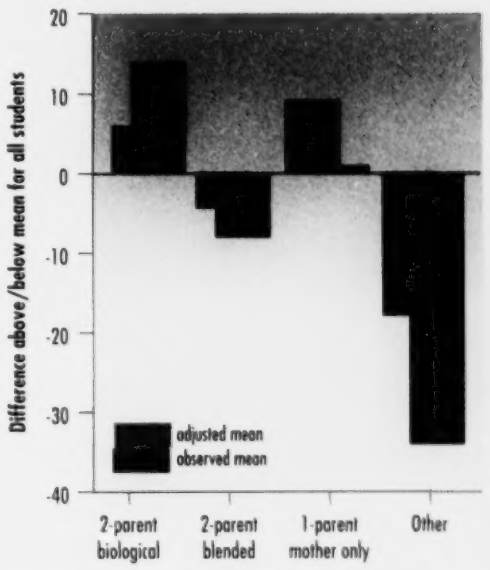
In terms of the statistical significance of these observed differences, 4th graders from all family configurations comprehend narrative better on average than students from the "other" category, and the two-parent biological configuration seems to confer an advantage on children in this respect relative to the two-parent blended families. However, 4th graders from one-parent mother-only families comprehend narrative text at about the same level as 4th graders from either of the two-parent configurations.

The shaded bars in Figure 20 represent the parallel *adjusted* means, estimates of what the observed means would be if the variables listed in Exhibit 4 were factored out. Put another way, these are estimates of what the average reading comprehension of each group would be if all the students were equally wealthy, came from families with identical educational and social backgrounds, attended the same kinds of schools, and so on, differing only in the structure of their family.

Under these conditions, we see that children from one-parent mother-only families do better than we might expect from simple observation alone. Separating out the disadvantages associated with single-mother families in the population as a whole suggests that children from these families do better than those from two-parent biological families, but the difference is not statistically significant. And, in fact, 4th graders from one-parent mother-only families do have higher levels of narrative comprehension than students in two-parent blended and other family types.

Figure 20

***Family Structure: Observed and Adjusted* Relationships; 4th Grade Narrative Score**

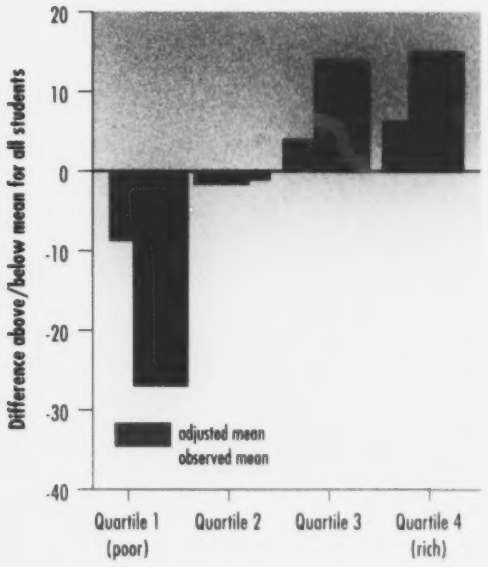


NOTE: The solid bars show the observed difference between the category average and the average for the total group. The shaded bars provide an estimate of this same difference adjusted statistically for other related influences shown in Exhibit 4.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report*. Washington D.C.: 1994.

Figure 21

Family Wealth: Observed and Adjusted Relationships; 4th Grade Narrative Score



NOTE: The solid bars show the observed difference between the category average and the average for the total group. The shaded bars provide an estimate of this same difference adjusted statistically for other related influences shown in Exhibit 4.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report*. Washington D.C.: 1994.

The obverse of this holds for 2-parent biological families; separating out their social and economic advantages, broadly conceived, suggests that this configuration per se offers less real advantage than we might have suspected. For other family configurations, the data suggest that the apparent disadvantages are not as pronounced when we take into account the range of related variables listed in Exhibit 4. Tests of statistical significance make one thing clear; 4th graders living in family configurations other than two-parent or one-parent mother-only are consistently disadvantaged with regard to narrative comprehension.

Family Wealth

Simple observation and evidence suggest that poverty is generally a handicap for students in school. Children from low-income families are less likely to attend prekindergarten programs than children from high-income families.[19] They are more likely to repeat a grade and to drop out if they had repeated than those from middle- or high-income families.[20] In high school, a higher percentage of students from low-income families drop out each year,[21] a fact reflected in the larger percentage of 19- to 20-year-olds from low-income families out of school without high school diplomas. Further, it is often argued that differences in family income account for much of the difference in dropout rates between racial and ethnic groups.[22]

However, the situation may not be quite as simple as it appears. Differences in family wealth are paralleled by differences in a variety of other attributes of students' families—race/ethnicity, for example. While 16 percent of white children live in poverty, 39 percent of Hispanic children and 46 percent of black children do.[23] Similarly, differences in parental educational attainments, and in the structure of families, are also related to differences in family economic circumstance. It follows that the observed reading comprehension deficit of poor children may not be due solely to poverty. Other family attributes related to family wealth may play roles that, without careful consideration, may be wrongly attributed to wealth.

A comparison of the *observed* and *adjusted* means in **Figure 21** offers some support for this notion. Again, the solid bars depict the *observed* group means as deviations from the population mean, and the shaded bars represent the *adjusted* means in the same way. In terms of the *observed* means, we see that students from poor families on average score 27 points below the mean for all students. Students from rich families have an average comprehen-

sion score 15 points above the average of all students. Thus, the gap between the poorest and richest is over 40 points. At first look, then, 4th graders from poor families are at a decided disadvantage in terms of their comprehension of narrative prose.

This view of the effects of being poor is modified, however, when we factor out the effects of confounding variables (all other variables listed in Exhibit 4). The *adjusted* category means shown by shaded bars indicate that, other things equal, the poor are not as disadvantaged, nor the rich as advantaged, by family wealth per se as simple observation might lead us to believe. Nevertheless, even after adjusting for those related influences shown in Exhibit 4, the gap between the rich and the poor remains, but at 15 points rather than 42.*

Race/Ethnicity

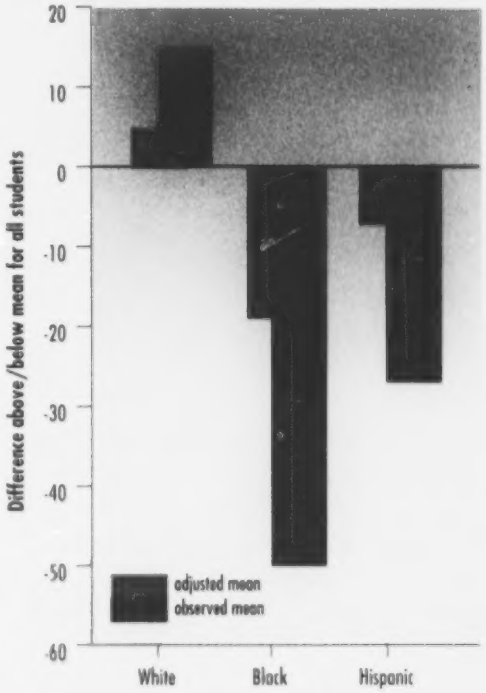
The growth of racial and ethnic diversity in the United States is most evident in the nation's schools, where the minority student population has increased from 24 to 33 percent, and the proportion of Hispanic students doubled, in the period between 1976 and 1991.[24] One in every two of these 11.4 million minority students lives in poverty.[25] Most minority groups suffer some degree of educational disadvantage—lower high school completion rates and lower levels of college entry.

The achievement deficit of minority students shows up with respect to reading comprehension. **Figure 22** shows clearly the differences in average reading comprehension levels across the three racial/ethnic categories in the form of *observed* and *adjusted* means for narrative comprehension among 4th graders. The *observed* means, shown as solid bars, indicate that whites, on average, score 15 points above the narrative comprehension mean for all 4th grade students, the average black student scores 50 points below this national average, and the average Hispanic student, 27 points below. As noted earlier, this pattern of disadvantage in reading comprehension is consistent across the two grades and the three comprehension measures.

A variety of explanations have been offered for this pattern of disadvantage: it is a reflection of the fact that minority status is confounded with socioeconomic status;[26] between-group differences in achievement motivation, aspiration, and expectations are responsible;[27] or it reflects differences in child-rearing

Figure 22

Race/Ethnicity: Observed and Adjusted Relationships; 4th Grade Narrative Score



NOTE: The solid bars show the observed difference between the category average and the average for the total group. The shaded bars provide an estimate of this same difference adjusted statistically for other related influences shown in Exhibit 4.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report.* Washington D.C.: 1994.

* From the standpoint of statistical significance, the adjusted mean for the poor is reliably different from the means of quartile 3 and the rich, but not quartile 2. The latter three groups do not differ significantly from each other.

practices.[28] Some explanations place responsibility on school practices such as isolating black students in separate classes or providing them a lower level of instruction.[29] Also, many teachers and administrators believe that minority children cannot or will not learn. Thus, some researchers believe that these low expectations become a self-fulfilling prophesy.[30] A similar line of argument has focused on the disparity between the culture and the language of the home and that of the school.[31] Some believe that home/school differences in conversational patterns, nonverbal communication, and social interactions are strong influences on academic achievement, particularly with regard to reading, writing, and forms of argument.[32]

We can only address these issues in a limited way, to the extent of holding a number of confounding factors constant (those identified in Exhibit 4) while looking at the relationship between race/ethnicity and reading comprehension. A comparison of the solid bars in Figure 22 identifies an *observed* difference between blacks and whites of a substantial 65 points. *Adjustment* for confounding factors reduces this black/white gap by more than half, to one of 24 points. Even at that level the difference remains statistically significant. Similarly, the observed white/Hispanic gap of 42 points is reduced to 12 points after the same kind of statistical adjustment, a difference that is no longer statistically significant. These analyses suggest that about two-thirds of the gap between majority and minority achievement can be accounted for by the other factors listed in Exhibit 4.

Parents' Education

Data in *The Condition of Education*[33] provide a good picture of the relationship between parents' educational attainment and overall student achievement. The pattern is captured in the following statistics: when compared to students with college educated parents, high school students whose parents have not completed high school are less likely to be in academic programs; are more likely to be in general or vocational/technical programs; have lower average academic achievement and lower verbal and math SAT scores; and are more inclined to report lower levels of parent expectations.[34]

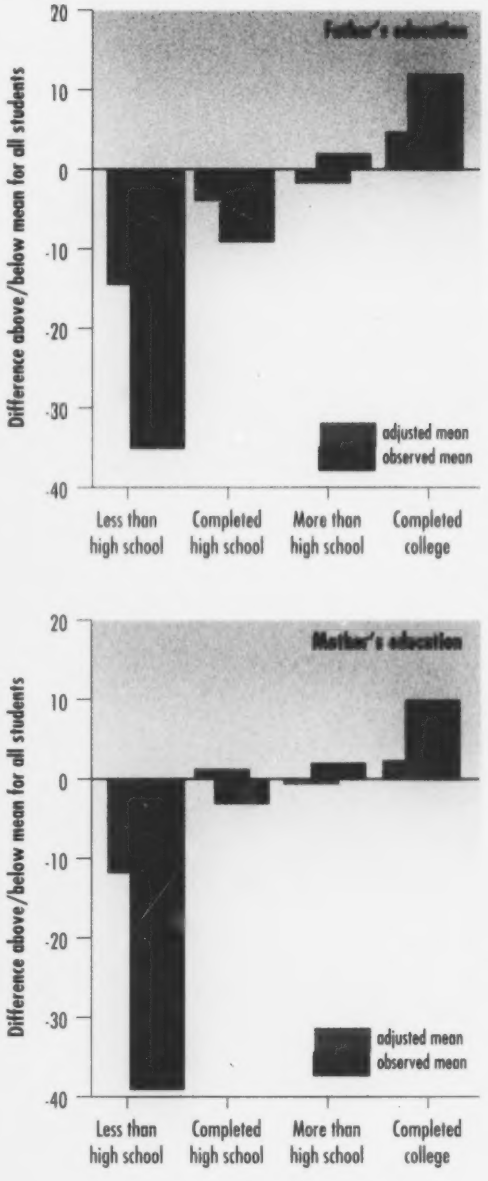
A similar pattern appears for reading comprehension—the children of better educated parents tend to read better than the children of less educated parents. **Figure 23** shows *observed* and *adjusted* group means using the same format as previously. Irrespective of whether we are looking at father's or mother's education, students whose parents have not graduated from high school have reading comprehension scores well below the U.S. average. Students whose parents have completed college have reading scores above the national average.

However, we know that well-educated parents also tend to have higher status occupations, make more money, read more, and encourage their children to read. Thus, the differences among the four groups defined by parent's education may not be attributable solely to parents' educational attainments. Looking at the *adjusted* group means (shaded bars) relative to the *observed* means (solid bars) makes this point clear. The effect of parents' education is considerably reduced when confounding variables are taken into account. For example, an apparent gap of 47 points between the means of 4th graders in the highest and lowest father's education groups is reduced to 19 points after adjustment. While this is still a statistically significant difference, it is only 40 percent of the observed difference. Similar changes occur in connection with mother's education—an apparent gap of 49 points between the means of 4th graders in the highest and lowest mother's education groups is reduced to 14 points after adjustment. This is still a statistically significant difference, but only 29 percent of the observed gap.

In short, other things equal, students whose parents did not complete high school are not as disadvantaged by their parents' educational attainments, and students whose parents have completed college are not as advantaged, as it might seem from simple observation alone. For either parent the advantages/disadvantages to students of parents' educational attainments tend to be located at the extremes—less than high school on the one hand and a college degree on the other, though the differences between less than high school and more than high school are also significant in the case of father's education.

Figure 23

Parental Education: Observed and Adjusted Relationships; 4th Grade Narrative Score



NOTE: The solid bars show the observed difference between the category average and the average for the total group. The shaded bars provide an estimate of this same difference adjusted statistically for other related influences shown in Exhibit 4.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report*. Washington D.C.: 1994.

Families and Reading Comprehension

The illustrations provided above were limited to a few family status characteristics among those investigated as part of the study proper—the educational and economic aspects of socioeconomic status, racial/ethnic status, and the parent configuration of families.

On the whole we were able to make two points clear: first, there are substantial differences in the average levels of reading comprehension between student groups defined in terms of these family attributes; second, these between-group differences have their origins in many factors rather than one. Disentangling these multiple influences to isolate that part unique to each offers a slightly different view of the world and one not always in accord with simple observation. The configuration of parents present in families matters, but one-parent mother-only families per se do not appear to disadvantage children in this respect. Racial/ethnic differences are large, but much of it is due to racial/ethnic differences in education and wealth, among other things. Family wealth matters too, but not as much as we might suppose from simple observation. Differences in parental education are also important, but not as important as we might expect, and then only at the extremes of educational attainment.

Community and School Influences

We now shift attention from the student as an individual to the student as a member of a class, within a school and a community. Schools are set within communities, which vary greatly according to population, resources, and the extent of parents' involvement and cooperation. This broad context serves as the background in which the school operates. Within that framework, schools define the more immediate context within which students learn to read. Their structure, size, resources, social composition, and leadership are believed to influence what goes on in classrooms and, hence, what students learn. Consistent with this view we look at these contextual influences as influences on student classroom groups rather than students as individuals. That is, we look at the effects of community, school, and classroom context on the average reading comprehension of students grouped in classes.

The IEA International Reading Literacy Study measured a number of contextual variables with presumed links to reading comprehension. For the purposes of illustrating the findings of the study as a whole, we focus our attention on three of these—parent involvement, instructional time, and class size. As before the data presentations are limited in focus to the narrative domain of reading literacy among 4th grade students.

Parent Involvement with Schools

Parent involvement with schools tends toward one or more of three types:[35] reinforcing at home what is learned in school; being part of a closely knit parent-school community where parents join in school activities and share a set of common values;[36] and a more managerial type of involvement where parents and community members have a voice in policy decisions affecting the school.*

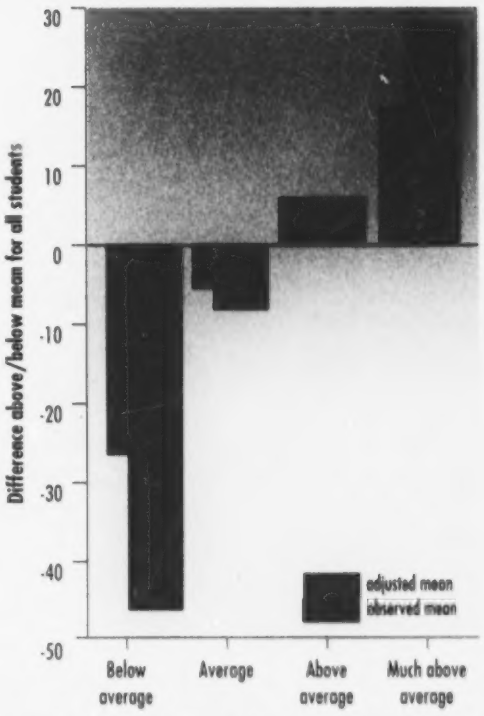
The IEA measure of parent involvement was a question to school principals about the degree of parent support for the school's principles and goals. Response alternatives ranged from "much below average" to "much above average" on a five-point scale. On the surface the measure seems to tap that form of parent involvement supporting the formation of a cohesive family-school community.

The relationship between parental involvement and the reading comprehension level of classrooms is shown in **Figure 24** where both *observed* and *adjusted* means for the narrative comprehension of 4th grade classrooms are shown for each of the four parent involvement categories.** The substantial relationship between parent involvement for the school and the reading comprehension levels of 4th grade classrooms is obvious. Where involvement is low, classroom means average 46 points below the national average, and where involvement is high, classrooms score 28 points above the national average—a gap of 74 points. Even after adjustment for the other attributes of communities, schools, principals, classes, and students that might well confound this relationship, the association between parent involvement and classroom achievement remains, though the observed gap of 74 points between the two extreme groups is reduced to 44 points.

Our findings here are consistent with the literature on effective schools; "All other things being equal, schools in which parents are highly involved, cooperative, and well-informed are more likely to develop effective organizations than schools in which parents do not possess these qualities." [37]

Figure 24

Parental Involvement: Observed and Adjusted Relationships; 4th Grade Narrative Score



NOTE: The solid bars show the observed difference between the category average and the average for the total group. The shaded bars provide an estimate of this same difference adjusted statistically for other related influences shown in Exhibit 4.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report*. Washington D.C.: 1994.

Instructional Time

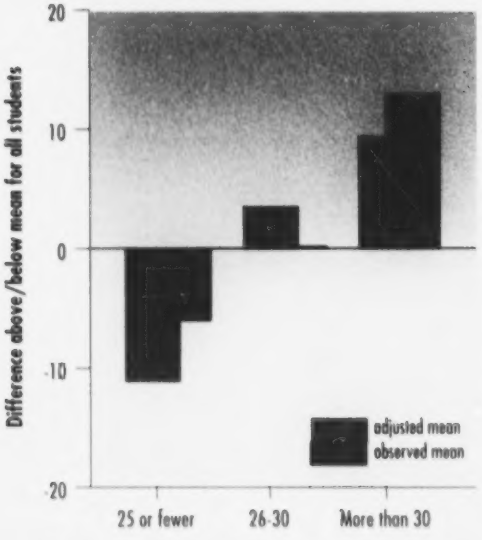
Instructional time is measured as the hours of instruction that the school provides for all subject areas. As such, the measure requires the assumption that more time available for learning generally results in more time for reading instruction and a greater level of

*Here, parental involvement is seen as part of the move toward school-site management, community control, and more consequential parent-school partnerships.

**Since few principals indicated support was "much below average," we merged this category with that for "below average" to create a four-point response scale.

Figure 25

Instructional Time: Observed and Adjusted Relationships; 4th Grade Narrative Score



NOTE: The solid bars show the observed difference between the category average and the average for the total group. The shaded bars provide an estimate of this same difference adjusted statistically for other related influences shown in Exhibit 4.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report*. Washington D.C.: 1994.

reading achievement, other things equal.[38] Principals' reports of instructional time ranged from 20 to 40 hours per week. For the purpose of this presentation the full distribution has been collapsed into three groups: 25 hours or fewer, 26 to 30 hours, and more than 30 hours. **Figure 25** displays *observed* and *adjusted* means for narrative comprehension among 4th grade classrooms for each of the three categories of instructional time.

Looking at the solid bars representing the observed means, it seems that schools offering more instructional time each week also have higher narrative comprehension levels in their 4th grade classrooms; however, the differences between the observed means across the three categories are not statistically significant.

The results of adjusting these category means for other potentially confounding factors is shown by the shaded bars. The effect of this adjustment is to suggest that, other things equal, 30 hours or more of instruction has somewhat less of an advantaging effect than we might suppose, while 25 or fewer hours has more of a disadvantaging effect that we would expect on the basis of simple observation. Further, the differences between the 25 or fewer category and each of the other two categories reach statistical significance.

Obviously some of the other attributes of students and schools noted in Exhibit 4 are related to both instructional time and reading comprehension. In the case of schools offering 25 hours or week or fewer, these factors are somehow compensating for the adverse effect of limited time since, if other things were equal, we would expect these "low-time" schools to do much worse than we observe. Nevertheless, it is clear that in schools that provide more than 5 hours of schooling per day for 4th graders, students learn to comprehend narrative text somewhat better than students in schools where the instructional day is shorter.

Class Size

The relationship between class size and achievement has a long and contentious history in educational thought. The contention arises out of the clash between economics and pedagogy. Since teacher salaries make up the greater part of school expenditures, policymakers would prefer large classes if students learned equally well in them. On the other hand, if effective learning depends heavily on teachers being able to interact with students individually and tailor their approaches to the needs of each student, then larger class sizes could be less effective. As class size increases, each student gets a smaller share of the finite amount of the teacher's time. Further, classroom management problems can multiply as class size increases, thus reducing the time teachers can spend on the instruction of either individuals or the class as a whole.

The literature on this issue is not entirely conclusive, although one meta-analysis by Glass and Smith has emerged as the most definitive statement on the matter.[39] Their study synthesized the results of 80 or so studies and concluded that for class size to make much of a difference to learning, it had to drop below 15 students. Since this is an economic impossibility for most school systems, the Glass and Smith finding has provided tacit support for larger classes.

The matter did not end there, of course. Opponents have argued that Glass and Smith's evidence was flawed, and to the extent that their finding was valid, it was limited to elementary school classes.[40] Others have argued that the effect of class size on learning varies across grade levels, among subject areas, and by instructional methods.[41]

Most recently, two major state-level studies have looked at the same issue. Indiana's Project Primetime showed that after 1 year smaller classes produced significant improvement in reading and math scores. However, after 3 years the benefits of the smaller classes vanished. Tennessee's Project STAR showed a one-time, one-quarter of a standard deviation improvement in test scores for the kindergarten or 1st grade children in small classes. Although the initial gain was maintained, scores did not continue to improve in subsequent years.

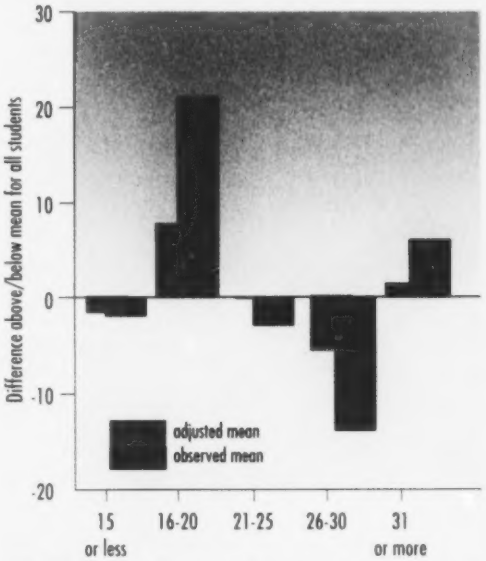
Both projects offered some resolution to the issue of class size. However, in both cases there were many associated factors that might have equally affected the results.[42] The analysis reported here contributes something to this debate, though the data do not suggest that the relationship is a simple one.

For the purposes of this presentation we grouped class sizes into five categories: 15 or fewer, 16–20, 21–25, 26–30, and 31 or more. **Figure 26** shows the usual set of *observed* and *adjusted* category means. The *observed* relationship captured by the solid bars suggests a less than straightforward interpretation that holds also, though with less force, for the *adjusted* means. Tests of statistical significance indicate significant differences between the *observed* narrative comprehension means of classes of 16–20 students and those with either of 21–25 or 26–30 students. Fourth graders in classes of 16–20 students read better, on average, than 4th graders in these two categories of larger classes.

The differences between these class groups persist after statistical adjustment for the confounding influences noted in Exhibit 4 but fail to reach statistical significance. So, strictly speaking, we are unable to say (with at least 95 percent certainty) that, other things equal, there are differences in narrative comprehension due to the size of the class in which a student is located.

Figure 26

Class Size: Observed and Adjusted Relationships; 4th Grade Narrative Score



NOTE: The solid bars show the observed difference between the category average and the average for the total group. The shaded bars provide an estimate of this same difference adjusted statistically for other related influences shown in Exhibit 4.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report*. Washington D.C.: 1994.

The inconsistencies in the pattern shown in Figure 26 probably reflect the effects of unmeasured influences on class size, tracking by ability among them. Since classes of the same size are created for different reasons and with students of varying ability levels—matters not adjusted for in these analyses—the interpretations provided must remain somewhat equivocal.[43] Nevertheless, the only statistically significant difference in this analysis does favor smaller classes.

Communities, Schools, and Reading Comprehension

In our discussions of communities and schools and their capacity to foster higher levels of reading comprehension among students, we found that three attributes clearly make contributions to differences in the reading performance of classrooms: parent involvement, instructional time, and class size.

Having parents actively participating in their children's elementary schools seems to make a difference to 4th grade reading achievement. This is true even after controlling for parent education, wealth, attributes of the school, and class size, as well as all other variables in our study. Findings like this have led to the notion that the creation of a network that ties the parents, the community, and the school together will enhance the ability of students to read well.

A school that provides more instructional time each week is likely to have higher levels of reading comprehension, other things equal. As the literature points out, however, this instructional time should not be confused with overall time counted just as days or hours. Instructional time means just that—time devoted to instruction, not assemblies, lunch, recess, announcements, and the like.

Our analyses contribute something to the continuing debate on class size. Basically, we find that relatively small classes in the range of 16–20 students appear to do better than somewhat larger classes of 21–25 and 26–30 students at 4th grade and for narrative comprehension. Statistical adjustments for confounding influences leave this pattern intact but render the differences statistically nonsignificant so it is not entirely clear what we can say about the effects of class size per se on reading achievement in the nation's classrooms.

None of these findings may seem especially surprising. However, we have demonstrated the importance of each separate factor free from other confounding influences. School policymakers may find a use for this information as they make decisions about school practices and policies.

Instruction
in American
Classrooms

In this section of the report, we provide a snapshot of 4th grade reading instruction in the United States. For the most part, the majority of students at this level have already learned the basics of reading. They can turn the symbols on the page into words, phrases, sentences, and ideas. Their teachers are more actively engaged in getting students to focus on meaning, to learn from what they have read, and to enhance children's ability to use information they have read.

To appreciate what goes on in reading classrooms, it is helpful to understand how theories of teaching reading have evolved over the past 50 years. Although research and practice operate on different timetables, there is nevertheless a noticeable shift toward the newer ways of thinking on the part of many teachers, most textbook publishers, and among civic and business leaders who press for higher levels of school achievement. We begin with an outline of the evolution of thinking about reading, and then focus on how closely teachers' beliefs and practices match evolving thought.

On the surface, it would seem logical to connect teacher beliefs and practices to student achievement. However, given the cross-sectional nature of the data from the IEA Reading Literacy Study, this is inappropriate because we would be unable to account for at least 3 years of prior instruction. Therefore, we can not attribute success or failure to current teacher practice.

The Evolution of Reading Theory

Within the living memory of a great many Americans, learning to read meant learning to reproduce, in speech or in writing, the author's exact message. Coinciding with this was the view that the student is an empty vessel to be filled by parents, teachers, and the author/expert who wrote the book. In this school of thought, teaching is the step-by-step *transmission* of knowledge, arrayed from easy to hard, from an active teacher to a passive student. The easy parts are thought to be recognizing words, reading sentences accurately, and remembering details. The hard parts, which are usually withheld from students until they have cleared certain hurdles, are thought to be the ability to make generalizations and to apply new knowledge to new tasks.

In the next stage of evolution, *interaction*, the reader/student plays a slightly more active role. The student is asked to connect

the material read with knowledge learned yesterday, last year, at school, or on the street. And so one begins to see a greater interaction between the book and the student, who is increasingly encouraged to think beyond the immediate words in the text. The interactive approach assumes that the reader must always fill in missing information because no text is fully explicit; and that filling in the blanks creates an engagement with the new information in the text that helps the student absorb and remember what he has read.

Next came a school of thought that places still greater reliance on the reader. The student is not only encouraged to fill in the inevitable missing information, but also to notice similarities and disparities between the text he is reading and what he already knows, or thinks he knows, about the subject. It is, in essence, a *transaction* between the reader and the writer. In addition, the student is asked to find answers in the text to self-generated questions. The student is no longer seen as an empty vessel: he or she is expected to have questions in mind and to grapple with the author about ideas and style. In contrast to the stepwise approach of earlier theorists, teachers expect students to deal with both details and large themes from the beginning. What differentiates easy from hard, according to transactional theorists, is the density of the material rather than the progression from facts to ideas to generalizations.

Therefore we arrive at three distinct periods in thought about reading:

- *Transmission*, where the meaning of the text lies in the literal words, which the student is expected to reproduce;
- *Interaction*, where meaning resides with both the text and the reader, and the student is expected to relate what he reads to what he already knows; and
- *Transaction*, where meaning is generated by the reader based on information from the text, personal knowledge, and purpose for reading.

We searched the data from the teacher questionnaires to see how teachers' beliefs and practices correspond, or fail to correspond, to these differing views about the teaching of reading, and finally, we explored the alignment between teachers' beliefs and actions.

What Teachers Believe

The items from the questionnaire about teachers' beliefs divide into two groups. The first group, which emphasizes sequenced instruction, is characterized by the sequencing of reading tasks, mastery of prior levels before moving on, an emphasis on accuracy, and strong teacher direction. It is closely aligned with the *transmission* approach discussed above.

While this stance is likely to be consistent with what phonics proponents advocate, it is broader than just phonics. Implicit, though not specifically stated, is a belief in developmental stages that are carefully orchestrated by either the material or the teacher.

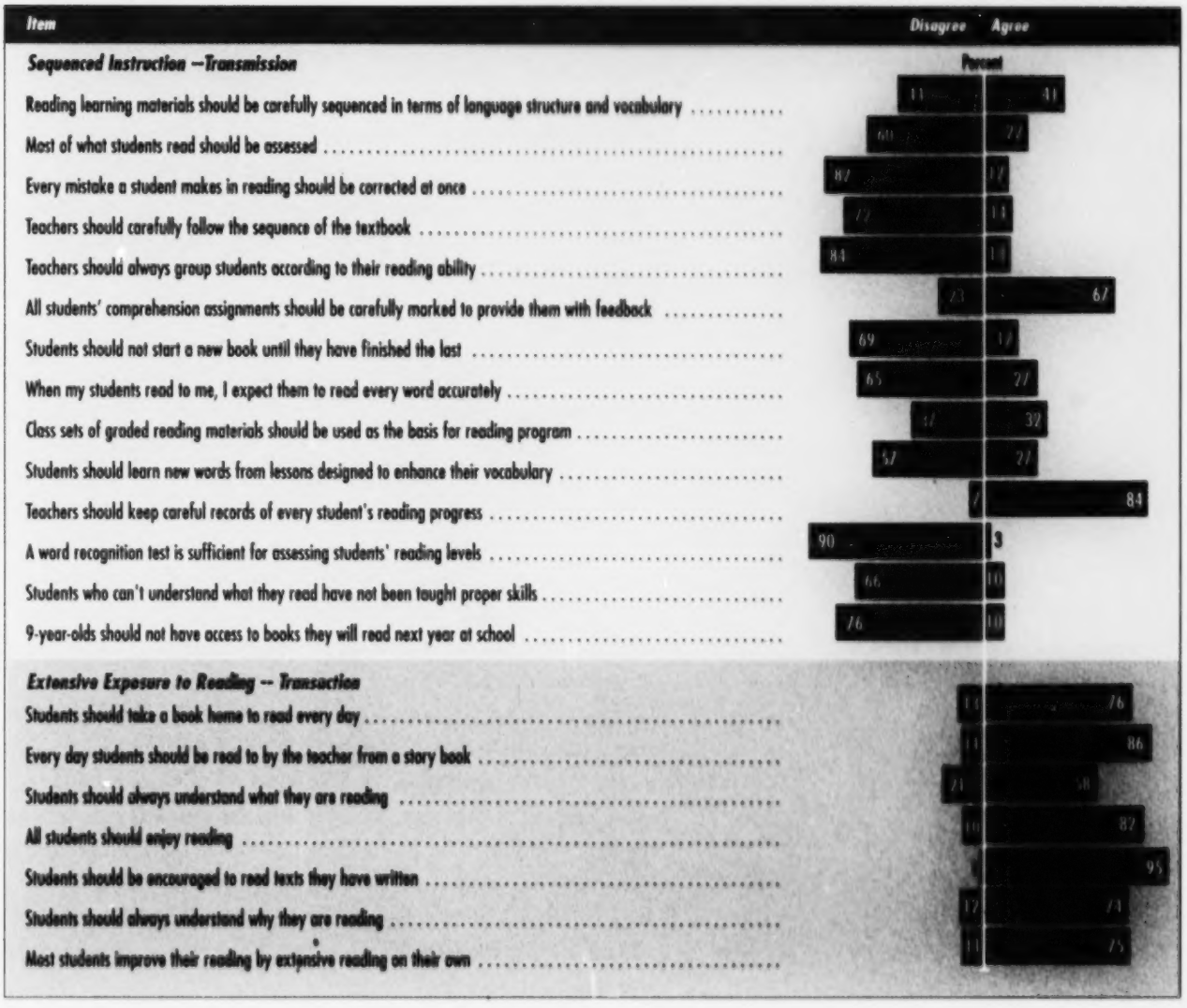
Alternatively, the second set of beliefs, which emphasizes an extensive exposure to reading, is more typical of the transaction approach. These beliefs focus more on what the student does and less on what the teacher does. Students are expected to read lengthy texts frequently, at home and at school, with little teacher direction. Students are expected to play a larger role in finding the meaning of what they read and to read texts that they themselves have written. Thus there is a greater emphasis on the integration of reading and writing.

Figure 27 displays 4th grade teachers' responses to a series of statements concerned with the nature of reading. They were asked to indicate the extent of their agreement on a five-point scale—strongly agree, agree, uncertain, disagree, and strongly disagree. For the purposes of this presentation we have collapsed all except the uncertain category into two by dispensing with the distinction between strongly agree and agree on the one hand, and disagree and strongly disagree on the other. Teachers responding that they were uncertain were omitted from these analyses and, as a result, the percentages in Figure 27 do not add to 100. Further, the statements themselves have been separated into two groups; those that relate to a transmission emphasis and those that indicate a transaction orientation.

The results are fairly clear; with only a few exceptions, teachers disagree with items that represent a transmission approach and agree with the items characteristic of the transaction approach. So, on the surface at least, teachers see reading as a process of transaction between the reader and the text—a transaction between textual information, personal knowledge, and personal motivation.

Figure 27

What Teachers Believe


Item
Disagree
Agree
Percent
Sequenced Instruction --Transmission
Reading learning materials should be carefully sequenced in terms of language structure and vocabulary
Most of what students read should be assessed
Every mistake a student makes in reading should be corrected at once
Teachers should carefully follow the sequence of the textbook
Teachers should always group students according to their reading ability
All students' comprehension assignments should be carefully marked to provide them with feedback
Students should not start a new book until they have finished the last
When my students read to me, I expect them to read every word accurately
Class sets of graded reading materials should be used as the basis for reading program
Students should learn new words from lessons designed to enhance their vocabulary
Teachers should keep careful records of every student's reading progress
A word recognition test is sufficient for assessing students' reading levels
Students who can't understand what they read have not been taught proper skills
9-year-olds should not have access to books they will read next year at school
Extensive Exposure to Reading -- Transaction
Students should take a book home to read every day
Every day students should be read to by the teacher from a story book
Students should always understand what they are reading
All students should enjoy reading
Students should be encouraged to read texts they have written
Students should always understand why they are reading
Most students improve their reading by extensive reading on their own

NOTE: Percentages do not add to 100; the shortfall is due to teachers checking "uncertain" as a response.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report*. Washington D.C. 1994.

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What Teachers Do

The essence of the survey questions about teachers' practices is teacher control. Does the teacher entirely dominate the proceedings, or share control with students, or center instruction around independent student activities? Questionnaire items relating to these issues were grouped statistically to indicate three general orientations toward teaching practices, namely whether these practices were, respectively, *materials directed, shared direction, or student centered.* **Figure 28** displays the items in question. Teacher responses to these items were phrased in terms of frequency of use and to simplify matters have been collapsed into two categories—rarely and frequently.

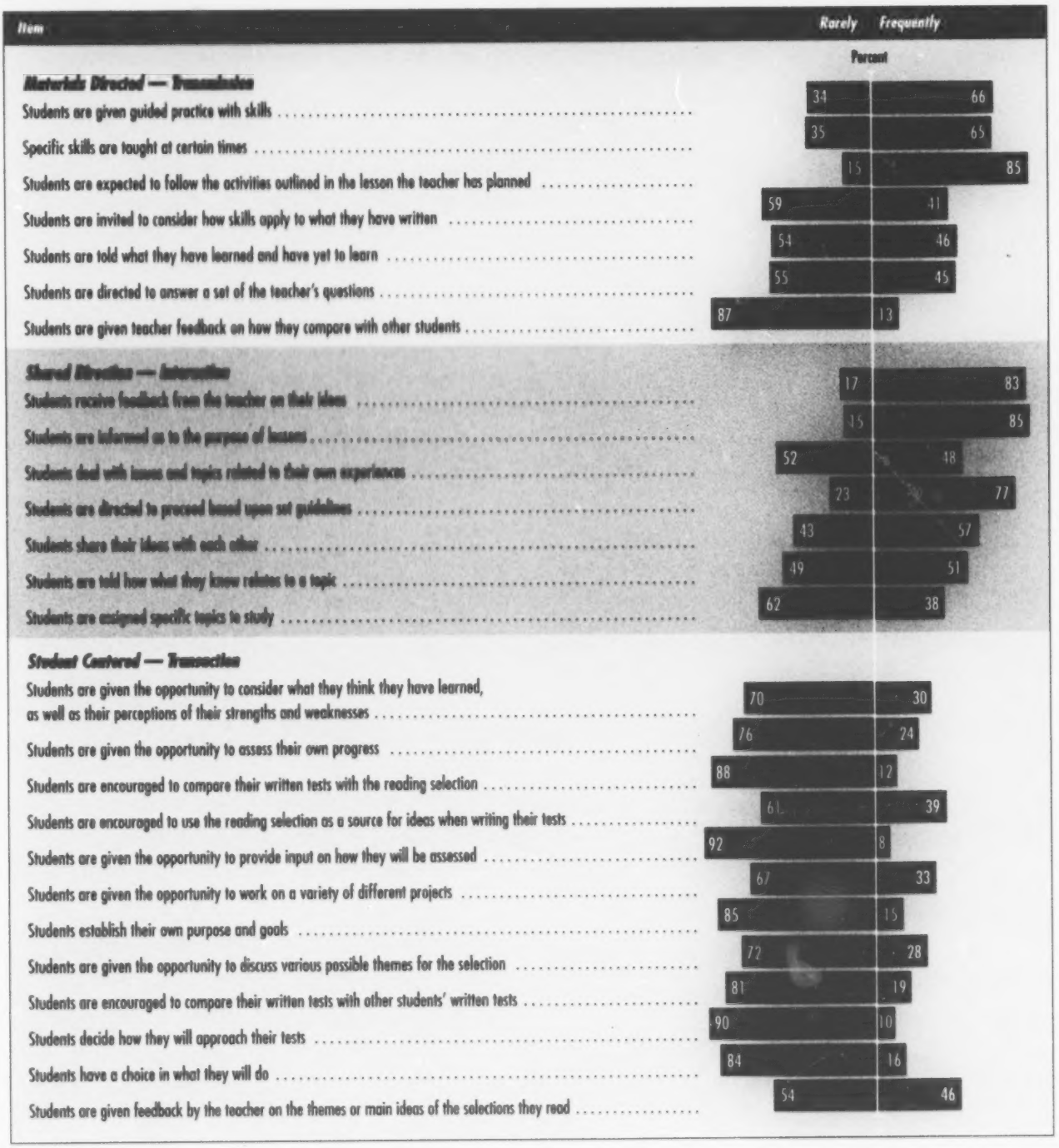
Practices emphasizing teacher control usually involve the teaching of specific skills—a class where the students follow, in lock step, the instructions of the teacher. The teacher carefully maps out what will be done according to a highly structured progression. In the *materials directed* set of items, note that for the first three items, two-thirds or more of the teachers surveyed said they expected students to work frequently on activities that are skills oriented and orchestrated in specific ways by either the teacher or the materials they have been assigned. Teachers who practice in this skill-based manner are presumed to be operating consistently within a *transmission* approach.

Teaching practices that fit with the notion of *shared direction* expect students to generate ideas, to share with one another, and to relate what they are learning to their own experience. Teachers still provide a high level of direction and feedback, but students are given some latitude as they work within a prescribed structure. The pattern of responses for the group of items in Figure 28 designated as tapping shared direction support this view. Teachers who practice this way are associated with the *interactive* approach.

Teaching practices that center on student autonomy may be characterized as *student centered.* Students are encouraged to have their own thoughts about how well they are doing, what they are doing, and how they will do it. Within a structured environment students are given the opportunity to organize themselves and the materials they use in order to find meaning in what they read. Teachers who favor these practices could be called *transactional* teachers. In Figure 28 responses to the 12 items listed in the group headed *student centered* seem to indicate fairly clearly that teachers of 4th grade reading do not often adopt a student-centered approach.

Figure 28

What Teachers Do


Item
Rarely
Frequently
Percent
Materials Directed — Transmission
Students are given guided practice with skills
34
66
Specific skills are taught at certain times
35
65
Students are expected to follow the activities outlined in the lesson the teacher has planned
15
85
Students are invited to consider how skills apply to what they have written
59
41
Students are told what they have learned and have yet to learn
54
46
Students are directed to answer a set of the teacher's questions
55
45
Students are given teacher feedback on how they compare with other students
87
13
Shared Direction — Interaction
Students receive feedback from the teacher on their ideas
17
83
Students are informed as to the purpose of lessons
15
85
Students deal with issues and topics related to their own experiences
52
48
Students are directed to proceed based upon set guidelines
23
77
Students share their ideas with each other
43
57
Students are told how what they know relates to a topic
49
51
Students are assigned specific topics to study
62
38
Student Centered — Transaction
Students are given the opportunity to consider what they think they have learned, as well as their perceptions of their strengths and weaknesses
70
30
Students are given the opportunity to assess their own progress
76
24
Students are encouraged to compare their written tests with the reading selection
88
12
Students are encouraged to use the reading selection as a source for ideas when writing their tests
61
39
Students are given the opportunity to provide input on how they will be assessed
92
8
Students are given the opportunity to work on a variety of different projects
67
33
Students establish their own purpose and goals
85
15
Students are given the opportunity to discuss various possible themes for the selection
72
28
Students are encouraged to compare their written tests with other students' written tests
81
19
Students decide how they will approach their tests
90
10
Students have a choice in what they will do
84
16
Students are given feedback by the teacher on the themes or main ideas of the selections they read
54
46

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report*. Washington D.C.: 1994.

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Thus, on the basis of teachers' responses to these survey questions the following observations seem possible: teachers vary a lot with regard to the use of transmission approaches (skills based); they frequently use interactive approaches (shared direction); and they rarely use transactional (student centered) approaches.

What Teachers Have Students Do

Teachers also answered questions about the kind of activities they required of their students—and how often. **Figure 29** shows the 21 items in question categorized into three groups: *skills-based* activities; *integrated language arts* activities; and, *schema-based* activities. Teachers responded to these items on a five-point frequency-of-use scale which has been collapsed, as above, into the two categories "rarely" and "frequently".

Figure 29 shows clearly that teachers frequently ask students to work on *skills-based* activities, an orientation that corresponds to the *transmission* approach. These activities include working on letter-sound relationships and word attack skills, learning new vocabulary from text, and doing reading comprehension exercises.

Teachers also assign *schema-based* work that would suggest an *interactive* orientation. They ask students to make predictions during reading, to make inferences and generalizations, summarize their reading, relate their experiences to the text, and look for a theme or message.

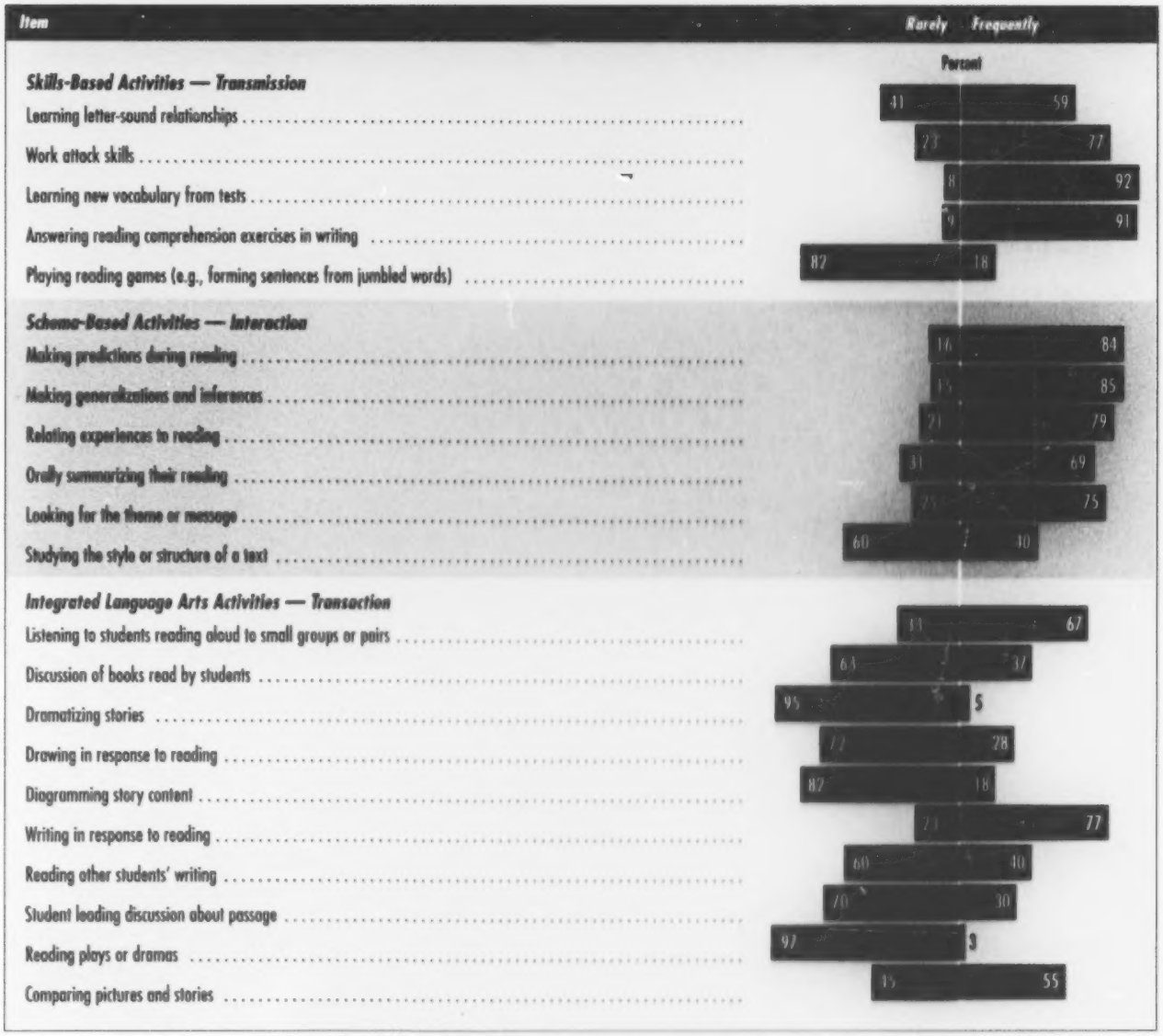
By contrast, teachers tend not to have students engage in *language arts* activities that call for the *integration* of reading, writing, speaking, and thinking. These activities require students to be much more assertive in relation to what they are learning. Some of the activities in this category are very time consuming—putting on a play, dramatizing a story—and this may explain why teachers do not report using many of the integrative activities on a regular basis.

Are Teachers' Beliefs and Practices Aligned?

The suggestion here is that teachers' beliefs and practices are not especially well aligned. Teachers are oriented away from skills-based, transmission approaches, but adopt that approach quite often in assigning reading activities to students. They tend to accept the transactional arguments of modern reading theorists, but do not consistently reflect these in their instructional practices.

Figure 29

What Teachers Have Students Do



SOURCE: U.S. Department of Education, National Center for Education Statistics, *Reading Literacy in the United States: Technical Report*. Washington D.C.: 1994.

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In offering some speculations on why this may be so, we recognize that teachers operate within a teaching environment that may severely limit their chances of putting into practice what they consider to be best practice. First, discussions of reading theory have elements of political correctness to them, and reading teachers are expected to subscribe to views of teaching whose implementation is impractical for reasons of resources and/or educational policy. Second, and more specifically, increasing discipline problems may push teachers toward drills and workbooks as a method of maintaining control in the classroom. Third, much of the theorizing about reading has yet to be translated into readily usable teaching practice and/or teaching materials.

Concluding Thoughts About Reading Literacy in the United States

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American school systems deal with a very diverse population of students and successfully teach them to read. Our students, in general, compare favorably with their peers in the other countries participating in the IEA study. American 4th and 9th graders do as well as or better than students in 29 other countries participating in the study and are outperformed only by students in Finland. Only a small fraction of our student body at the 4th and 9th grade level does not meet the average for students in the OECD countries. In fact, a large proportion of our most disadvantaged students achieve or exceed this standard.

While we are doing reasonably well in comparison with many of our trading partners, our own national assessment continues to paint a different picture. The performance of students relative to the achievement standards set by the National Assessment Governing Board suggests that American students do not reach sufficient levels of reading proficiency. How one defines an adequate level of reading proficiency makes a big difference in how we see the American educational enterprise. This is an issue that should be and is considered in the public forums of state houses, state education agencies, local school districts, schools, and communities.

Despite the fact that our students are doing well overall by international standards, it is clear that there is an uneven distribution of reading proficiency. Some segments of our population do not do as well as others. We need only turn to comparisons of performance among the racial/ethnic groups and various social and economic groups to see that there still are those who do well and those who do not. Blacks, the poor, and children of the poorly educated all are at a persistent disadvantage with regard to reading proficiency. Our education systems do not seem to be ameliorating these differences as well as we might hope.

It is fairly commonplace to show that a variety of family statuses are related to student achievement. We do this, and illustrate it here with data on socioeconomic, racial/ethnic, and family structure differences in reading comprehension. In a less commonplace approach, we look at the same relationships disentangled from the complex of confounding influences within which they are set. In some cases this refinement simply tells us

that the influence is not as pronounced as one would have thought on the basis of simple observation. In others, it runs counter to the observed relationship, at least in part, and changes our view of the way in which the world works. Racial/ethnic differences are nowhere as pronounced as simple observation suggests; a good part of them probably reflects the socioeconomic status differences between racial/ethnic groups. The poor economic circumstance of families per se is less of an impediment to learning than we might think. The apparent disadvantaging effects ascribed to one-parent mother-only families are not due to this family configuration as such, but rather to the fact that a variety of other disadvantaged statuses are associated with these families.

In addition to the family, the school and the community play a vital role in helping children develop their literacy skills. We approach the effects of reading comprehension on students as a classroom group using the same strategy and find that, other things equal, a school day of more than 5 hours is of benefit relative to a shorter school day—basically, more time, more learning, more achievement. We find as well some tentative evidence that smaller classes promote better achievement than larger classes. And, we find that where parents get involved with schools and support schools in their mission, the reading achievement of students benefits.

How teachers organize instruction has an important influence on achievement. This study, as all other cross-sectional studies, does not allow us to look at the effect of instruction on performance. One year's instruction will not offset the impact of all the prior years of instruction. So, with the data at hand, we can only describe the state of the art. Teachers profess a strong belief in the newer theories that focus more on the student as an active reader and learner who must bring knowledge to bear on what is being read and taught. Teachers' instructional strategies, however, are not as close to the cutting edge. It may be that reading instruction is in a state of transition.

While there is more to be done in the conceptualization and design of international studies, especially with respect to developing an understanding of why some nations seem better able to promote achievement than others, the benefits are fair-

ly clear. Any of the participating nations could develop analyses like those presented above and, in so doing, place the achievement of their students in an international perspective. In so doing, we have been able to view the achievement of various subpopulation groups against something like an international benchmark. The view was enlightening since it showed our most disadvantaged groups to fare reasonably well relative to the average student in OECD nations.

We found value too in the U.S. national data considered apart from that of other nations. It allowed us to provide a perspective on the relationships of student, family, school, and community attributes to reading achievement that took into account some of the complexity of the various factors at work.

This potential to inform nations about themselves relative to others and about the complexities of educational processes in their own nation has clear value as informational input to policy decisions designed to promote learning and to promote the learning of subpopulation groups presently disadvantaged in this respect.

Endnotes

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